2020

SASP

150 MCQs

AUA SELF-ASSESSMENT STUDY PROGRAM

Collection by DR. Nasser Saad ALBADDAI MD
Resident Urology

If there is any falsies or missed text please sending me at email: nasalbaddai@gmail.com
Mobile: WhatsApp/ telegram/ 00967771888307

AUA 2020

1. A 12-year-old girl has recurrent UTIs. Physical examination is normal. An ultrasound shows a large, thickened bladder wall and bilateral hydroureteronephrosis. A VCUG demonstrates no VUR and a large PVR. The next step is:

A. MAG-3 renogram.
B. MRI scan of lumbosacral spine.
C. urethral pressure profile.
D. uroflow with EMG.
E. cystoscopy and urethral dilation.
ANSWER=D

Profound dysfunctional voiding can be quite severe w ith the presentation of non- neurogenic neurogenic bladder (Hinman-Allen syndrome). The assessment of dyssynergic voiding with uroflow/EMG should identify the etiology. Although invasive urodynamics and MRI scan of the spine may be indicated, these would be second-order evaluations after failed management or when associated w ith other symptoms of potential spinal cord tethering. Certainly, more invasive procedures such as cystoscopy and urethral dilation will not address this functional issue. The presence of hydroureteronephrosis is not due to upper tract urinary obstruction; therefore, a MAG-3 renal scan is not indicated.

2. An early manifestation of septic shock is:

A. bradycardia.
B. respiratory alkalosis.
C. high output renal failure.
D. decreased cardiac output.
E. decrease in plasma norepinephrine.
ANSWER=B

Respiratory alkalosis is a very early sign of septic shock and is caused by the initial tachypnea stim ulated by the sepsis. As hypoperfusion occurs, metabolic acidosis develops. Tachycardia, oliguria, increased cardiac output, and increased plasma norepinephrine occur later in septic shock.

3. A four-year-old boy with PUV has a vesicostomy. Serum creatinine is 0.6 mg/dL. Ultrasound shows minimal hydronephrosis. Videourodynamics show a bladder capacity of 30 mL with a pressure of 14 cm H20 when leakage occurs from the vesicostomy with no reflux. Undiversion is considered. The best management is resection of the posterior urethral valves and:

A. ileal augmentation cystoplasty.
B. ileal augmentation with appendicovesicostomy.
C. bladder cycling via the vesicostomy.
D. primary closure of the vesicostomy.
E. autoaugmentation cystoplasty.
ANSWER-D

There was at one tim e concern that a cutaneous vesicostomy caused permanent loss of bladder volume and compliance. However, recent studies show that it does not significantly affect either, and that in fact, the bladder cycles via a properly created vesicostomy. Preoperative videourodynamics showing a small bladder capacity do not predict eventual functional bladder capacity. Approxim ately 75% of children will have normal bladder function after vesicostomy closure. The need for bladder augm entation is more related to the effects of the primary pathological condition on the detrusor. Augm entation cystoplasty may be needed after undiversion in patients with PUV, based on the effect of the primary obstruction on long-term detrusor function. The eventual need for augm entation should be assessed with sequential follow -up after the vesicostomy has been closed.

4. Patients with VHL syndrome most frequently have:

A. renal angiomyolipoma.
B. cafe-au-lait spots.
C. glioblastomas.
D. thyroid carcinoma.
E. retinal angiomas.
ANSWER=E

Patients w ith VHL syndrome may have hemangioblastomas of the cerebellum, RCCs, and cystadenomas of the epididymis. The diagnosis, however, can often be made most easily with inspection of the retina, w ith identification of angiomas. Renal angiomyolipomas are commonly seen in tuberous sclerosis complex. Thyroid carcinoma can be seen more commonly in patients w ith m ultiple endocrine neoplasia syndrome. Cafe-au-lait spots are pathognomonic of neurofibromatosis.

5. A 55-year-old woman on warfarin for recurrent pulmonary emboli has cystitis. The drug least likely to cause enhanced anticoagulation is:

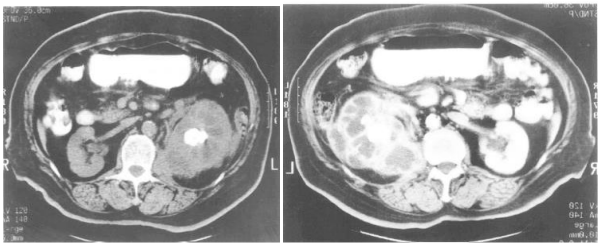
A. tetracycline.
B. nitrofurantoin.
C. ciprofloxacin.
D. trimethoprim.
E. sulfamethoxazole.
ANSWER=B

All of the follow ing drugs may enhance the hypoprothrom binem ic response to oral anticoagulants: allopurinol, aminoglycosides, aminosalicylic acid, chloramphenicol, cimetidine, ethacrynic acid, fluoroquinolones, indomethacin, isoniazid, m etronidazole, miconazole, nalidixic acid, oxyphenbutazone, phenylbutazone, propoxyphene, salicylates, sulfonamides, tetracyclines, trim ethoprim /sulfam ethoxazole, and Vitamin E. N itrofurantoin does not interact w ith warfarin. The semi-synthetic beta-lactam penicillins, such as carbenicillin, ticarcillin, mezlocillin, and piperacillin, may produce coagulation defects at high doses, especially in the presence of renal im pairm ent, lodinated contrast m aterial may also produce transient abnormalities in clotting. Broad-spectrum antimicrobials, particularly when administered orally, may disrupt the gut flora and alte'r Vitamin K synthesis. Drugs such as allopurinol and metronidazole inhibit the hepatic metabolism of oral anticoagulants. Drugs such as ethacrynic acid, nalidixic acid, and sulfonamides displace oral anticoagulants from proteins and increase the amount of circulating anticoagulant.

6. A 55-year-old woman has flank pain, fever, and malaise. Her serum creatinine is 1.6 mg/dL. Abdominal CT scan is shown. The next step is:

A. long-term antibiotics.
B. percutaneous drainage.
C. PCNL.

D. nephrectomy.
E. nephroureterectomy.



ANSWER=E
The clinical presentation and CT scan are most consistent w ith xanthogranulom atous pyelonephritis (XGP). The CT scan demonstrates the presence of a calculus and severe distortion of the renal parenchyma. Lipid laden macrophages are commonly identified in renal tissue and urine. Such cells are not seen in the urine of patients with pyelonephritis. In this case, complete removal of the kidney is warranted. Long- term antibiotics or PCNL is not the best solution. There is no abscess fluid to drain. Although RCC and urothelial carcinoma have been reported to occur in such cases, they are rare and the clinical picture is most consistent with an inflamm atory, not a neoplastic, disorder. Nephroureterectomy is not indicated.

7. One month after L5 laminectomy, a 30-year-old woman develops lower extremity weakness, a PVR of 300 mL, and an intermittent urinary stream. Videourodynamics demonstrates detrusor-sphincter dyssynergia. The most likely explanation is:
A. pseudodyssynergia.
B. recurrent lumbar disc herniation.
C. cauda equina syndrome.
D. undiagnosed multiple sclerosis.
E. permanent nerve injury from laminectomy.
ANSWER=D
Detrusor external sphincter dyssynergia (DESD) is a urodynamic finding that is strictly found in injuries of the suprasacral spinal cord. Pseudodyssynergia refers to a spike on the electromyography (EMG) tracing during cystometry that occurs from an attem pt to inhibit an involuntary detrusor contraction. This is a voluntary contraction of the external sphincter. Since the sacral spinal cord begins at spinal column levels T12 to L1 and term inates in the cauda equina at spinal column level L2, recurrent lumbar disc herniation, cauda equina syndrome, and permanent nerve injury from the laminectomy are not associated w ith DESD. Of all the choices, m ultiple sclerosis is the only process that is associated with an insult to the suprasacral spinal cord. In addition, m ultiple sclerosis often presents in young females.

8. A six-week-old boy was born at 27 weeks' gestation. His postnatal course has been complicated by respiratory distress, bronchopulmonary dysplasia, and a patent ductus arteriosus. He has required long-term diuretic therapy with furosemide. A KUB reveals calcifications in the mid- and upper abdominal regions consistent with bilateral renal calculi. The most likely mechanism for the formation of the stones is:
A. hypercalciuria.
B. hyperuricosuria.
C. obstructive uropathy.
D. type I RTA.
E. type II RTA.
ANSWER=A
Renal calculi occur in very low birth weight pre-term infants w ith a history of severe ventilatory problems and bronchopulmonary dysplasia. Many of these infants require long-term treatm ent w ith diuretic agents to manage heart failure. The diuretic agent used most often is furosemide, which increases the rate of urinary calcium excretion up to ten times normal. Chronic hypercalciuria from furosemide therapy has been shown to result in nephrocalcinosis and calculus form ation. Loss of calcium from chronic adm inistration of furosemide may lead to secondary hyperparathyroidism and bone changes. Treatm ent includes switching from furosemide to thiazide diuretics. Other etiologies of stone form ation do not occur with increased frequency in prem ature infants requiring diuretic therapy. Hyperuricosuria is associated with gouty diathesis and may predispose to uric acid and calcium oxalate stones. RTA is an electrolyte disturbance due to impaired renal hydrogen ion excretion (type 1) and impaired bicarbonate resorption (type 2),'but is not a common etiology for stones in prem ature infants on diuretic treatm ent.

9. The vascular supply of the omentum is most reliably based upon which artery:
A. splenic.
B. gastroduodenal.
C. right gastroepiploic.
D. short gastric.
E. left gastroepiploic.
ANSWER=C
The celiac axis provides the arterial blood supply to the stomach through: 1) the left gastric artery which supplies the lesser curvature, 2) the hepatic artery which gives off the right gastric artery, which also supplies the lesser curvature, and the gastroduodenal artery which supplies the antrum and duodenum before giving off the right gastroepiploic artery, and 3) the splenic artery which gives off the short gastric arteries, which supply the fundus and cardia, and the left gastroepiploic artery. The right and left gastroepiploic arteries supply the greater curvature and the om entum. The omentum can be used as a pedicle flap. The pedicle can be based on either the right or left gastroepiploic artery; however, the caliber of the right gastroepiploic artery is usually larger, thus favoring its use.

10. Calcium reabsorption induced by parathyroid hormone and Vitamin D occurs primarily in the:
A. proximal convoluted tubule.
B. cortical collecting tubule.
C. medullary collecting tubule.
D. distal tubule.
E. thin descending limb of Henle.
ANSWER=D
The site of action of both parathyroid hormone (PTH) and Vitamin D is on the distal tubule. Calcium resorption occurs in this region of the kidney architecture under horm onal influence. Calcium is reabsorbed in the proximal convoluted tubule as well, but the difference is that it is not

under the influence of PTH. Similarly, approxim ately 15% of filtered calcium resorption occurs in the thick ascending loop of Henle that occurs passively. The cortical and medullary collecting tubules, as well as the loop of Henle, are not responsible for calcium resorption and homeostasis. Aldosterone regulates sodium reabsorption and potassium secretion in the cortical collecting tubule. The properties of the m edullary collecting tubule are similar to the cortical collecting tubule with respect to the principle and intercalated cells responsible for NaCI reabsorption and acid secretion, respectively. However, the medullary collecting tubule differs from the cortical collecting tubule with respect to its water and urea permeabilities and the greater ability of the medullary collecting tubule to concentrate urine under the influence of ADH. There is limited active transport of any kind within the thin descending limb of Henle; however, there is high perm eability to water.

11. A 39-year-old woman has dysuria and frequency. Urinalysis shows 30 WBC/hpf and midstream urine culture shows 103CFU/mL coagulase-negative Staphylococci. The next step is:

A. phenazopyridine.
B. repeat midstream culture.
C. urine culture for mycobacteria.
D. antimicrobial therapy.
E. catheterized urine culture.

ANSWER=D

The standard definition of significant bacteriuria for a clean voided urine is > 105 CFU/mL of a uropathogen. This criterion has stood the test of time for screening and epidem iological studies and for entering patients in clinical trials. However, there are several im portant exceptions to its rigid use in clinical practice and one is in patients with a pyuria/dysuria syndrome. In these patients, a lower colony count may represent significant bacteriuria. Certain bacterial species such as coagulase-negative Staphylococci grow slowly in urine and significant infections may only have counts of 103 CFU/mL. Since the patient has a symptomatic, culture-proven UTI, treatm ent w ith phenazopyridine alone would be inappropriate. Repeat urine culture (midstream or catheterized) is not indicated. Mycobacteria culture is indicated only in sterile pyuria.

12. A 48-year-old man undergoes radical cystectomy with a Studer orthotopic neobladder. Three months postoperatively, he has urinary frequency and day and nighttime incontinence. A videourodynamic study (image shown) demonstrates a capacity of 300 mL, detrusor pressure at capacity is 10 cm H20, Valsalva LPP is 130 cm H20, and PVR is 75 mL. The next step is:

A. observation.
B. alpha-blocker therapy.
C. CIC every two to three hours.
D. placement of an artificial urinary sphincter.
E. augmentation of his orthotopic diversion.

ANSWER=A

The length of time postoperatively after orthotopic diversion influences continence results. The image demonstrates a smooth walled bladder w ithout reflux. The reservoir capacity can and typically does increase over the first six to twelve months, and even longer in patients with anti-refluxing afferent limbs (e.g., Studertype). CIC w ill decrease incontinence but too frequent CIC will prevent the reservoir from increasing its capacity over time. Alpha-blocker therapy may relax the proximal urethra and exacerbate incontinence. At this point, it is premature to perform interventions such as sphincter placement as well as augm entation.

13. A 14-year-old girl has primary amenorrhea. She is in the 25th percentile for height and has a webbed neck. Her karyotype is 45, XO. The most likely genitourinary abnormality is:

A. renal agenesis.
B. horseshoe kidney.
C. VUR.
D. UPJ obstruction.
E. vaginal agenesis.

ANSWER=B

This patient has Turner Syndrome. These girls can be recognized by their typical physical findings including short stature, webbed neck, and shield chest. Girls with the 45, XO karyotype usually exhibit all the stigmata of the syndrome. Patients with the 45, XO/46, XY karyotype are at increased risk for dysgerminoma and gonadoblastoma and require gonadectomy. Horseshoe kidney occurs w ith increased prevalence in patients with Turner syndrome and a renal ultrasound is warranted. VUR, renal agenesis and vaginal agenesis are not associated with Turner syndrome. UPJ obstruction may occur in association with horseshoe kidney, but is not seen with increased frequency in Turner syndrome.

14. A 58-year-old man has incontinence one year following radical prostatectomy. Urodynamic evaluation demonstrates normal bladder capacity and no detrusor overactivity. At 250 mL, Valsalva maneuver increases bladder pressure to 150 cm H20 without evidence of urine leakage. The next step is:

A. remove catheter and repeat Valsalva maneuver.
B. repeat urodynamic study with suprapubic catheter.
C. uroflowmetry.
D. retrograde urethrogram.
E. cystoscopy.

ANSWER=A

The patient most likely has stress incontinence. The catheter could be occluding the bladder neck, preventing dem onstration of stress incontinence, and the Valsalva should be repeated after catheter removal. A repeat urodynamic study with a suprapubic catheter would be overly aggressive and is not necessary since the bladder capacity is known to be normal and there is no evidence of detrusor overactivity. Cystoscopy and retrograde urethrogram would demonstrate an anastomotic stricture, but would not demonstrate stress incontinence. Likewise, uroflow m etry is unlikely to add additional inform ation when a pressure-flow study has been performed. If stress urinary incontinence is demonstrated with catheter removal, and the patient is interested in proceeding with surgical intervention, cystoscopy should then be done to evaluate his anastomosis.

15. A 28-year-old man with Kallmann syndrome is treated with hCG and FSH injections over two years. His serum testosterone and FSH levels are normal. His semen volume is 1.0 mL, sperm count is six million sperm/mL, and sperm motility is 90%. Well-timed sexual intercourse has not resulted in pregnancy for his wife, whose evaluation is normal. The next step is:

A. intrauterine insemination.
B. color Doppler scrotal ultrasound.
C. ICSI.
D. TRUS.
E. testis biopsy.
ANSWER=A

Intrauterine insemination (IUI) is an effective treatm ent option for couples when the male partner has a total motile sperm count (ejaculate volume x sperm concentration x % sperm m otility) greater than 5 m illion. IUI involves placing processed sperm into the uterine cavity via a catheter inserted through the cervix and into the uterus. This approach allows the sperm to bypass the vaginal fluid and cervical mucous, and thus, higher numbers of motile sperm are able to reach the fallopian tubes, where fertilization occurs. Semen volume and sperm production are commonly limited in men w ith Kallmann syndrome, because prostate, seminal vesicle, and testicular size are often decreased as a result of this condition. However, sperm quality tends to be com pletely normal. In vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) are not indicated at this point. Screening scrotal ultrasound is not indicated in infertile male patients w ithout physical exam findings needing further investigation, and testis biopsy w ill not be helpful since the patient is not azoospermic. TRUS is useful to evaluate for suspected ejaculatory duct obstruction, which is usually associated w ith low ejaculate volume (< 1.0 mL) azoospermia. Ejaculatory duct obstruction is not associated w ith Kallmann syndrome.

16. The parameter that most accurately measures renal function in a patient with an ileal conduit is:

A. creatinine clearance.
B. urinary concentrating ability.
C. fractional excretion of sodium.
D. acid loading.
E. proteinuria.
ANSWER=C

Measuring renal function in patients w ith intestinal diversion may be difficult. Most parameters of renal function will be affected by the intestinal absorption of various substances in the urine, including creatinine and urea (affecting acid loading tests), as well as secretion of alkalinizing substances and alteration in the osmotic content affecting urinary concentrating ability, so creatinine clearance and proteinuria will not be accurate measures. Sodium handling in ileal segments is not markedly altered as am monium substitutes for sodium in the Na/H antiporter in the bowel lumen.

17. A four-year-old boy has renal failure due to membranoproliferative glomerulonephritis. He has undergone a bilateral orchiopexy and proximal hypospadias repair as an infant. He is at greatest risk for development of:

A. gonadoblastoma.
B. NSGCT.
C. Sertoli cell tumor.
D. Wilms'tumor.
E. RCC.
ANSWER=D

A number of recognizable syndromes are associated w ith an increased incidence of Wilms' tumor. Three syndromes that are well known to be at high risk for Wilms' tum or development include: Denys-Drash syndrome (DDS - male pseudohermaphroditism manifested by proximal hypospadias and cryptorchidism.m em branoproliferative glom erulonephritis, and nephroblastoma), Beckwith- W iedemann syndrome (macroglossia, nephromegaly, and hepatomegaly), and WAGR syndrome (Wilms' tumor, aniridia, gonadoblastoma, and intellectual disability). In patients w ith DDS, the kidneys need to be m onitored carefully and removed as renal failure occurs. W ith DDS, there is no increased risk of RCC, Sertoli cell tum or or NSGCT of the testis.

18. A six-year-old boy with left scrotal pain has a tender indurated epididymis and normal testes. Urinalysis is normal. An ultrasound shows normal testes with Doppler evidence of blood flow, an enlarged, hypervascular left epididymis, and normal kidneys. The next step is:

A. scrotal exploration.
B. radionuclide testicular scan.
C. VCUG.
D. oral antibiotic therapy.
E. NSAIDS.
ANSWER=E

This boy most likely has torsion of the left appendix testis or epididymis resulting in reactive epididymitis. This does not require surgical exploration when the diagnosis is clear. Considering the age of the patient, the presentation is very strongly consistent with torsion of an appendix testis, and testicular scan is unlikely to add any useful inform ation. In cases of epididymitis in this age group, antibiotics are not needed as bacterial epididymitis is rare. The most appropriate treatm ent includes NSAIDS as well as rest and scrotal support. A VCUG is not useful given the normal kidneys on ultrasound and absence of infection.

19. A three-year-old boy lost one-half of his scrotal skin after a dog attack two hours ago. His testicles, penis, and urethra are spared. The next steps are tetanus immunization, antibiotics, debridement, and:

A. split-thickness skin graft.
B. full-thickness skin graft.
C. placement of testicles in the thigh.
D. scrotal closure with drainage.
E. secondary scrotal closure.

ANSWER=D

The best choice for management is a tetanus im m unization (if he is not up to date), antibiotics, debridement, and primary closure with drainage. Skin grafts and placement of the testicles in the thigh are seldom required when half of the scrotal skin remains. Secondary closure for such a recent injury is unnecessary. If grafting is required, a meshed split-thickness graft is preferable because the meshing allows exudate to escape and gives improved cosmesis. Thigh pouches are rarely required as wet to dry dressings of the exposed gonads can be effective until reconstruction is feasible.

20. In a unilateral partially obstructed kidney, the aspect of renal function that is usually preserved is:

A. urinary concentration.
B. urinary dilution.
C. ammonia excretion.
D. potassium reabsorption.
E. sodium reabsorption.

ANSWER=B

Im pairm ent of all aspects of renal function, including urinary concentration, ammonia excretion, potassium reabsorption, and sodium reabsorption are seen in unilateral ureteral obstruction. Only urinary dilution is not affected by chronic unilateral ureteral obstruction in humans.

21. A 23-year-old man underwent left transscrotal orchiectomy demonstrating a mixed NSGCT (70% embryonal carcinoma, 30% seminoma) with lymphovascular invasion. Tumor markers and metastatic evaluation are negative. In addition to RPLND and excision of the left spermatic cord and left scrotal scar, treatment should include:

A. observation.
B. chemotherapy.
C. left inguinal sentinel lymph node biopsy.
D. left superficial inguinal lymph node dissection.
E. XRT to left hemiscrotum and left inguinal lymph nodes.

ANSWER=A

A meta-analysis including 206 cases w ith scrotal violation found that the risk of local recurrence increased from 0.4% for patients treated with inguinal orchiectomy to 2.9% with scrotal violation, but there was no difference in systemic recurrence or survival rates. As such, excision of the scrotal scar may be considered at the time of RPLND and removal of the spermatic cord remnant, with no additional treatm ent necessary. Specifically, prophylactic (given the negative metastatic evaluation) inguinal lymph node biopsy, dissection, or XRT would not be necessary. Likewise, scrotal violation during orchiectomy would not itself represent an indication for systemic chemotherapy.

22. A 45-year-old man with a history of recurrent UTIs has two days of perineal discomfort, dysuria, and urinary frequency. Urinalysis reveals bacteriuria and pyuria. Physical examination reveals an enlarged prostate. He finished his last course of antibiotics one week ago. Before antibiotic treatment is restarted, the culture that should be obtained is:

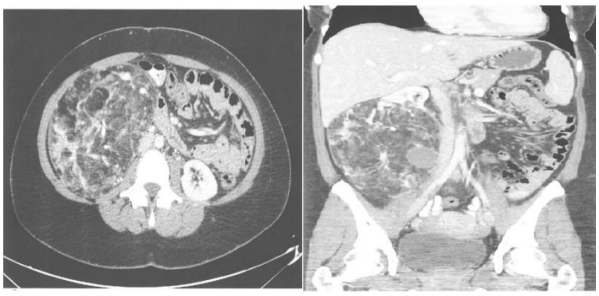
A. midstream urine.
B. urine by suprapubic aspiration.
C. expressed prostatic fluid.
D. pre- and post-prostatic massage voided urine and prostatic fluid.
E. initial voided urine.

ANSWER=A

This man likely has chronic bacterial prostatitis, which is usually manifested by recurrent UTIs with the same organism. While lower urinary tract bacterial localization is helpful in identifying the prostate as a nidus of infection, localization is useless in the presence of bacteriuria, with all isolation specimens having bacterial growth due to contam ination. This man is currently symptomatic w ith documented bacteriuria, and therefore, should not undergo localization testing. In this situation, preferred treatm ent is to obtain a midstream urine culture and treat withnitrofurantoin. N itrofurantoin w ill clear the urine of bacteriuria and have little to no effect on intraprostatic bacteria. Once the urine has been documented to be sterile, usually in three to five days, bacterial localization studies with initial voided, midstream, expressed prostatic secretions, and post-prostatic massage urinary specimens should be obtained. These tests w ill allow confirm ation of chronic bacterial prostatitis. For chronic prostatitis caused by E. coli, four to six-week treatm ent with fluoroquinolones is superior to the alternative three-month therapy with trim ethoprim /sulfam ethoxazole; however, the risk of fluoroquinolone use should be discussed with the patient. Approximately 20% of the patients w ill fail the initial therapy and a rescue treatm ent w ith a second cycle of therapy with an alternative quinolone has been found to rescue the m ajority of the relapsing patients.

23. A 23-year-old asymptomatic woman has a palpable right-sided abdominal mass with serum creatinine of 0.9 mg/dL. CT scan is shown. The next step is:

A. follow-up CT scan in three months.
B. CT-guided biopsy.
C. angioembolization.
D. right nephrectomy.
E. neoadjuvant XRT followed by radical nephrectomy.



ANSWER=D
This patient has a massive fat-containing tum or of the right kidney. The primary differential diagnosis is between an angiom yolipoma (AML) and a retroperitoneal liposarcoma. The CT scan demonstrates the tum or arising from within the kidney, not the retroperitoneum, and the tum or does not "push" the kidney as is characteristic of the imaging findings in liposarcoma. Thus, the diagnosis is a very large AML, and w ith these characteristic radiological findings, a biopsy is not necessary. Given the large size of this AML, it has a significant risk for hemorrhage, particularly in a young woman of childbearing age, so observation is not an appropriate management strategy. Selective renal arterial em bolization is the treatm ent of choice in many instances of AML, especially in the acute situation of spontaneous hemorrhage. In most cases of massive AML, the tumor size precludes effective em bolization and the risk of spontaneous hemorrhage persists despite embolization. Thus, surgical resection (or a partial nephrectomy, if technically feasible) is a better choice. In this case, because of the large tumor size and anatomical location, a total nephrectomy is the likely outcome. Neoadjuvant radiation prior to resection may be recommended if this were a liposarcorrfa, but as AML is a benign tumor, this is not indicated.

24. The stone composition most resistant to fragmentation by SWL is:
A. uric acid.
B. struvite.
C. calcium oxalate dihydrate
D. brushite.
E. hydroxyapatite.
ANSWER=D
Brushite, cystine, and calcium oxalate m onohydrate stones are all fairly resistant to SWL fragm entation; however, of these types, brushite is the most resistant. Uricacid is less resistant to fragm entation, and struvite is the most fragile. Calcium oxalate dihydrate and hydroxyapatite are more fragile than brushite to SWL.

25. A 72-year-old woman has had six symptomatic UTIs over the past year. These infections return shortly after antimicrobial courses are concluded, and cultures have demonstrated significant colony counts of E. coli. Renal ultrasound is normal. The next step is:
A. ciprofloxacin prophylaxis.
B. nitrofurantoin prophylaxis.
C. oral low dose estrogen.
D. intravaginal estrogen.
E. lactobacillus.
ANSWER=D
The efficacy of estrogen for the prevention of UTIs in post-menopausal women has been demonstrated in several studies. There appears to be a higher effectiveness rate in topically applied estrogen in the vagina w ith an improvement in lactobacillus concentrations, decreased vaginal pH and a decrease in UTI episodes from 5.9 to 0.5 episodes per year. Antim icrobial prophylaxis may be considered, but quinolones and nitrofurantoin are not the best choices due to the potential for side effects. Lactobacillus probiotics, while effective in an investigational setting, have not been subject to the scrutiny of controlled trials. The use of oral estrogen for UTIs is controversial due to systemic side effects (e.g., increased risk of stroke and blood clots if oral estrogen is started five years after menopause).

26. A 60-year-old man with erectile dysfunction has an nonpalpable right testicle. Ultrasound reveals a 2 x 2 cm homogeneous ovoid mass at the right internal ring. The next step is:
A. observation.
B. hCG therapy.
C. percutaneous biopsy.
D. orchidopexy.
E. orchiectomy.
ANSWER=A
The presence of cryptorchidism increases the risk of testicular cancer in the cryptorchid testis. Orchiopexy before puberty has been associated with a decreased risk of testicular cancer, and is, therefore, recommended when cryptorchidism is detected in this age group. Management of the postpubertal patient with cryptorchidism has evolved overtim e, as understanding of the long-term malignancy risks of cryptorchid testes has improved and as perioperative anesthetic risks have decreased. Given the risk of malignancy, orchiectomy of the undescended testes may be considered in healthy postpubertal patients until the risk of operative m ortality exceeds the risk of m ortality from germ cell cancer, which has been dem onstratedto occur at age 50 for ASA class I and II cases. As such, while orchiectomy may be considered for healthy patients with cryptorchidism between age 12 and 50, observation is recommended for postpubertal patients at significant anesthetic risk, as well as all males older than 50 with cryptorchidism (as in this patient). Biopsy would not be indicated in this setting, as a negative biopsy cannot exclude the presence of malignancy elsewhere in the testis. Likewise, although hCG therapy has historically been used to stimulate testicular descent, such hormone therapy is not currently recommended given the lack of rigorous data supporting its efficacy.

27. A 24-year-old paraplegic man manages his bladder with CIC. At a routine office visit, he has pyuria and bacteriuria. The strongest indication for antimicrobial therapy is:
A. >10 WBC/hpf on urinalysis.
B. > 100,000 CFU/mL on urine culture.
C. increased urinary leakage between catheterizations.
D. presence of MRSA in urine.
E. malodorous urine.
ANSWER=C
Asymptomatic bacteriuria is common in spinal cord injury patients, especially those managed with CIC, and generally does not need to be treated. Sterile and CIC have been associated w ith rates of bacteriuria ranging from 1% to 3% per catheterization. Symptomatic infections should be treated, but these patients usually do not report the same irritative symptoms as neurologically intact parents. Symptoms that merit treatm ent include fever, flank or abdominal discomfort, increased leakage between catheterizations, increased spasticity, symptoms of autonom ic dysreflexia, and malaise or lethargy. Malodorous urine may be bothersome to the patient but is not an indication for treatm ent. Most patients on CIC w ill have > 100,000 CFU/mL and > 10 WBC/hpf on urine culture if there is any bacteriuria. The presence of antimicrobial-

resistant bacteria, such as' MRSA, in patients w ith asymptomatic bacteriuria is not an indication for therapy.

28. A 45-year-old obese man with untreated sleep apnea develops nocturnal enuresis. He has no daytime incontinence. Physical examination is unremarkable except for mild lower extremity edema. Urinalysis is negative, and his PVR is 30 mL. The most likely etiology of the enuresis is:

A. increased secretion of ADH.
B. increased secretion of atrial natriuretic peptide.
C. detrusor overactivity.
D. mobilization of lower extremity edema.
E. hypercarbia induced drowsiness.
ANSWER=B

Sleep apnea is a recognized cause of nocturia and secondary nocturnal enuresis. It causes nocturnal diuresis by a cascade of events which are precipitated by hypoxia which occurs during the interm ittent occlusion associated with obstructive sleep apnea. The hypoxia-induced increase in right atrial transmural pressure leads to elevated atrial natriuretic peptide (ANP) and subsequent decreased secretion of ADH, resulting in increased nocturnal urinary output. ANP secretion is induced by elevated intrathoracic pressures due to diaphragm atic contraction against a closed upper airway. Isolated detrusor overactivity at night is unlikely in the absence of daytime symptoms. M obilization of mild lower extrem ity edema is unlikely to cause a significant increase in nighttim e urine production. Sleep apnea can cause hypercarbia but this is not a known cause of increased urine production. An additional advantage of treatm ent of sleep apnea with CPAP is im provement in nocturnal enuresis

29. A 43-year-old woman has a 3 cm vesicovaginal fistula on the posterior bladder wall, 2 cm above the trigone, three years following pelvic XRT for cervical cancer. CT urogram demonstrates normal upper urinary tracts without evidence of recurrent disease. The next step is:

A. bladder biopsy.
B. bilateral percutaneous nephrostomies.
C. injection of fibrin glue.
D. transvaginal repair with gracilis interposition.
E. transabdominal repair with omental interposition.
ANSWER=A

Although less common with improved radiation techniques, radiation-induced fistulas are commonly associated w ith persistent or recurrent cervical cancer. Fistulas may occur during or shortly follow ing XRT as a result of tumor necrosis in the wall of the vagina or bladder. Fistulas that develop one or more years following XRT are attributed to radiation-induced endarteritis obliterans w ith subsequent necrosis of the vaginal and bladder wall. The most im portant aspect in the management of a patient with a fistula follow ing XRT is to rule out recurrent cervical cancer. Locally recurrent cervical cancer follow ing definitive XRT is associated with poor survival despite aggressive m ultimodal management. Fistula repair would not be indicated in the setting of recurrent disease. While nephrostomy placement would divert some of the urine in the short term, it would not help with the diagnosis of potential recurrence. Fibrin glue could be considered in a small (< 2-3 mm), oblique, non- radiated fistula; this would not be an appropriate option in this patient.

30. A 30-year-old woman received a renal transplant two years ago. Her creatinine is 1.1 mg/dL and she has no proteinuria. She is planning a pregnancy and should be advised:

A. to proceed.
B. that a Cesarean section delivery will be required.
C. that a late delivery is expected.
D. that there is a greater risk of birth defects.
E. to reduce immunosuppression during pregnancy.
ANSWER=A

There have been many successful pregnancies reported after renal transplantationand vaginal delivery is appropriate w ithout the concern for a pregnancy that extends beyond norm ative gestational age values. Most women can deliver vaginally w ithout risk to the allograft. The risk of birth defects is not significantly different from age- matched women in the general population. Because the volume of distribution increases during pregnancy, the dose of immunosuppressive medications may be increased to prevent renal allograft rejection. Impaired renal allograft function and proteinuria are significant risk factors for pre-eclampsia, hypertension, rejection, and graft failure.

31. The intracavernosal administration of phenylephrine may cause:

A. hypotension and tachycardia.
B. hypotension and bradycardia.
C. supraventricular arrhythmia.
D. hypertension and tachycardia.
E. hypertension and bradycardia.
ANSWER=E

Potential side effects of intracavernous sympathomimetics include dizziness, hypertension, reflex bradycardia, headache, tachycardia, and irregular cardiac rhythms. However, phenylephrine is a pure alpha-agonist, with the most likely side effect, if seen, being hypertension w ith secondary reflex bradycardia.

32. A 72-year-old man develops dyspnea and hypertension following adrenal-sparing nephrectomy. The preoperative CT scan shows aortic and renal artery calcification. A ventilation perfusion scan shows a low probability of pulmonary emboli. The best agent to treat the hypertension is a(n):

A. diuretic.
B. calcium channel blocker.
C. alpha-blocker.
D. ACE inhibitor.
E. angiotensin receptor blocker.
ANSWER=A

This patient has a high probability of having renal artery stenosis. By removing one kidney, the situation becomes analogous to the one-kidney, one clip model. In this situation, hypertension is largely maintained by volume and sodium excess. In the face of normal circulating angiotensin II (All) levels, ACE inhibitors or All antagonists do not result in marked decrease of blood pressure. Calcium channel blockers and alpha-blockers also are not very effective until the volume overload has been treated.

Since the etiology of hypertension is intravascular volume expansion, the best choice is a diuretic.

33. Unilateral renal agenesis is associated with an increased incidence of:

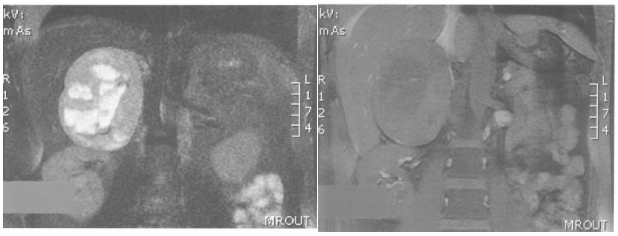
A. ipsilateral anorchia.
B. two vessel umbilical cord.
C. ipsilateral adrenal agenesis.
D. Mullerian duct abnormalities.
E. urethral anomaly.

ANSWER=D

Unilateral renal agenesis (URA) occurs in one out of 1100 births; it is more common on the left and may be inherited in an autosomal dom inant pattern with variable inheritance. Twenty-five to thirty percent of children with the VACTERL association (vertebral, im perforate anus, cardiac, tracheoesophageal atresia, renal, and limb anomalies) w ill have unilateral renal agenesis. Although ipsilateral adrenal agenesis can occur, genital anomalies occur much more frequently. In men, the testis and the head of the epididymis are invariably present. However, the proximal structures derived from the W olffian duct (the body and tail of the epididymis, vas deferens, seminal vesicle, ampulla, and ejaculatory duct) are absent in almost 50%. In women w ith URA, one-fourth to one-third have an abnorm ality relating to Mullerian duct development. Ureteral bud abnormalities are common; the ipsilateral ureter is absent in about 1/2 of individuals. Urethral anomaly and two-vessel cord are not significantly increased in patients with unilateral renal agenesis.

34. A 63-year-old woman with unexplained weight loss has a negative endocrine evaluation and the MRI images shown. The next step is:

A. needle biopsy.
B. abdominal CT scan with contrast washout.
C. chest CT scan.
D. adrenalectomy.
E. radical nephrectomy with adrenalectomy.



ANSWER=C

This is a large (> 6 cm), heterogeneous appearing mass which has a high probability of representing a malignancy. W hile this may be adrenocortical carcinoma, metastasis (in particular from lung cancer) should be considered as well. In either of these cases, chest imaging is indicated prior to proceeding with further evaluation (i.e., biopsy) or management (i.e., surgery). In the case of adrenocortical carcinoma, chest imaging would be im portant for staging, as if there are metastases detected, then systemic therapy might be appropriate, particularly as the tumor is non- functional. Moreover, if a lung mass is detected, then tissue diagnosis may be required by biopsy to determ ine primary versus metastatic site of disease. The mass is too large and heterogeneous to presume this is an adenoma, so an adrenal protocol CT scan w ith washout phases is unlikely to be helpful in guiding management.

35. A 32-year-old woman with a T5 spinal cord injury develops profuse sweating, hypertension, and bradycardia during urodynamic evaluation. The bladder is emptied but her symptoms persist with a blood pressure of 170/100 mmHg. The next step is to administer:

A. oral nifedipine.
B. sublingual nifedipine.
C. transdermal nitroglycerin.
D. I.V. atropine.
E. I.V. hydralazine.

ANSWER=C

Autonom ic hyperreflexia or dysreflexia (AD) is most commonly seen in patients with spinal cord injury levels above T6. It is an exaggerated sympathetic nervous system response to afferent visceral stim ulation that manifests w ith sweating, headache, hypertension, reflex bradycardia, and flushing above the level of the spinal cord lesion. The normal systolic blood pressure (SBP) in paraplegics and tetraplegics is low, usually 90-110 mmHg. Elevation of SBP with AD symptoms classically begins with a 20 mmHg rise above baseline, well within normal range for a neurologically-intact individual. If the SBP is > 120 mmHg and the patient is symptomatic, presumed AD is present. Initial therapy should focus on the removal of inciting factors. In this case, that would include em ptying of the bladder and removal of all urodynamic catheters. If the symptoms persist and SBP remains elevated, but lower than 150 mmHg, then evaluation and treatm ent of fecal im paction (second-most common cause of AD after bladder distension) are recommended. However, if the systolic pressure remains above 150 mmHg after bladder em ptying and catheter removal, then use of a rapid-onset, short-acting anti-hypertensive is recommended while the cause of AD is investigated. One-half to 1 inch of nitropaste 2% should be applied above the level of the lesion (vasoconstriction occurs below the level of the lesion and may interfere with drug absorption) and is preferred due to its ability to be wiped free if rebound hypotension occurs. Nifedipine had been recommended as a primary treatm ent or prophylactic agent for AD; however, because of several adverse, rebound hypotensive crises resulting in stroke or Ml after its use, the Joint Commission for Treatment of High Blood Pressure and National Spinal Cord Injury committees have discouraged its use and it has been banned for treatm ent or prevention of AD in some hospitals. If the blood pressure remains elevated and does not respond to transdermal or oral therapy, I.V. hydralazine is an option; however, blood pressure may be quite labile after its use with both hypotension and/or rebound hypertension, and the patient will require hospital admission w ith further m onitoring. After the patient is stabilized, additional m onitoring may be required. Atropine is not indicated for treatm ent of this condition

36. A 32-year-old man desires a biological child. Both testes are 4 cm long and soft. Two semen analyses reveal azoospermia with volumes of 3.0 ml and 3.1 mL. Testosterone is 280 ng/dL, LH is 7.5 IU/L, and FSH is 8.5 IU/L. The next step is:

A. repeat semen analysis.
B. clomiphene citrate.
C. beta-hCG and recombinant FSH.

D. testis biopsy.
E. epididymovasostomy.
ANSWER=B
The aim of clomiphene citrate therapy in an infertile patient with low serum testosterone levels is to increase intratesticular testosterone levels and thus optimize the intratesticular environm ent for spermatogenesis. The clomiphene citrate dosage should be titrated to increase the serum testosterone levels to the mid-normal range, when possible. A third semen analysis is unlikely to aid in the diagnosis given that both prior semen tests revealed normal ejaculate volume azoospermia. While exogenous hCG might help optim ize his low testosterone levels, recombinant FSH is not indicated given that his FSH levels are not abnorm ally low. A diagnostic testis biopsy is not required to establish the presence of spermatogenic dysfunction, as the likelihood of non-obstructive azoospermia in a man with testis longitudinal axis less than 4.6 cm and FSH greater than 7.6 IU/L is 89%. Microsurgical reconstruction with epididymovasostomy w ill not results in ejaculated sperm because his azoospermia is caused by impaired spermatogenesis, not obstruction.

37. During a left laparoscopic pyeloplasty, the inferior mesenteric artery is accidentally ligated. Blood supply to the left colon will be primarily maintained by the:
A. left colic artery.
B. left colic artery and inferior hemorrhoidal arteries.
C. middle colic artery and superior hemorrhoidal arteries.
D. marginal artery and superior hemorrhoidal arteries.
E. middle colic and middle hemorrhoidal arteries.
ANSWER=E
The inferior mesenteric artery supplies the main blood supply to the left colon via the left colic artery and superior hem orrhoidal arteries. When this is injured or ligated, blood supply is m aintained proximally via the middle colic artery which is a branch of the superior mesenteric artery, and distally via the middle and inferior hem orrhoidal arteries. The middle colic and hem orrhoidal arteries connect w ith each other via the marginal artery of Drummond. This artery runs parallel to the wall of the colon. It is im portant to m aintain this artery during any dissection of the left colon in cases where injury to the inferior mesenteric artery may occur.

38. A 31-year-old man sustains complete scrotal skin avulsion from a machinery accident. The skin is placed in ice saline and transported to the hospital with the patient. The next step is:
A. saline wet to dry dressings and delayed grafting.
B. reapplication of avulsed skin as a full thickness skin graft.
C. immediate split thickness skin grafting to the scrotum.
D. bilateral testicular thigh pouch creation.
E. thigh flap reconstruction of scrotum.
ANSWER=A
Genital skin avulsion may result from machinery accidents, high-speed blunt trauma, or bizarre sexual practices. The classic mechanism is entrapm ent of clothing and scrotal skin in the power takeoff apparatus of farming tractors. The underlying testicular structures are often spared. Complex avulsions are best managed with initial judicious debridem ent, close observation, and delayed reconstruction via primary re-approximation or skin grafting. Immediate grafting of a potehtially contam inated wound offers little advantage and may risk graft loss if infection ensues. While avulsed skin from blunt degloving injuries may be preserved and used as either split or full-thickness grafts, machinery accidents in which skin is entrapped and avulsed are likely to damage the intrinsic vascular structures of the skin and make it unsuitable for grafting. Wet to dry dressings allow for granulation tissue to develop with its associated neovascularity, and also cleansing and debridem ent of the wound bed. Thigh pouches are a reasonable alternative for tem porary or permanent management of exposed testes, but im mediate creation of pouches may risk infection if the wound is contaminated. Likewise, thigh flap reconstruction is an elective definitive approach to scrotal skin absence, but is not appropriate in the acute injury setting. Finally, the scrotum is uniquely amenable to primary reconstruction because of its excellent vascularity and elasticity; primary closure is possible even when up to 60% of scrotal tissue is lost.

39. A 49-year-old man with diabetes and hypertension has an 8 cm solid renal mass. Preoperative cardiac angiography reveals a 90% occlusion of the right coronary artery and he undergoes bare metal stenting across the blockage. The minimum delay before surgery is:
A. two weeks.
B. four weeks.
C. three months.
D. six months.
E. 12 months.
ANSWER=B
Perioperative coronary stent thrombosis is a catastrophic complication that can occur in patients receiving both bare-metal and drug-eluting stents. Non-cardiac surgery and most invasive procedures increase the risk of stent thrombosis, especially when the procedure is performed early after stent placement. Reasons for ah increased risk of stent thrombosis include: incomplete stent endothelialization early after placement, discontinuation of antiplatelet therapy during the peri-procedural period, and the prothrom botic state often created during surgery. Avoidance of preoperative stent im plantation, selection of optimal stent type when stent im plantation cannot be avoided, delay of non-essential, non-cardiac surgery, a continuation of antiplatelet therapy in the perioperative period, and increased collaboration between different disciplines (surgery, anesthesiology, and cardiology) can all help minimize the risk of perioperative stent thrombosis. Numerous clinical guidelines advise that elective, non-cardiac surgery be delayed for at least four weeks after bare-metal stent im plantation and 12 months after drug-eluting stentplacement in order to minimize the risk of stent thrombosis. Furthermore, if surgery will need to be performed within 12 months of stent placement, then bare-metal stent im plantation istypically preferred over drug-eluting stents, because bare-metal stents endothelialized more rapidly and may, therefore, carry a lower risk of stent thrombosis.

40. A 72-year-old man with a large RCC has right hip pain. Bone scan shows multiple metastases and plain films of the right femur show a 4.0 cm lytic cortical lesion. The next step is:
A. XRT to the femur.
B. strontium-89.
C. open stabilization of the femur,

D. pazopanib.
E. ipilimumab and nivolumab.
ANSWER=C
Surgical treatm ent of bony metastases from RCC is indicated in patients who are at high risk of fracture, particularly those with large (> 3 cm) lytic lesions, involving the cortex of w eight-bearing bones. Although the patient has a poor long-term prognosis, should he develop a femur fracture, the quality of his remaining survival w ill be markedly diminished. Since the risk of fracture is relatively high (given the size and characteristics of the lesion), systemic therapy should be delayed until the femur has been stabilized. Tyrosine kinase inhibitors (pazopanib) or checkpoint inhibitors (ipilim um ab and nivolumab) would both be reasonable choices follow ing stabilization of the femur. XRT and strontium -89 would help control pain but would not be adequate to prevent fracture in this case.

41. A 67-year-old man underwent radical prostatectomy with pelvic lymph node dissection following three months of LH-RH agonist therapy. The pathologist will not be able to accurately describe:
A. tumor volume.
B. tumor stage.
C. nodal status.
D. Gleason score.
E. surgical margins.
ANSWER=D
There are many ongoing neoadjuvant clinical trials evaluating novel androgen deprivation therapies prior to radical prostatectomy. Tumor volume, stage, nodal status, and margin status can be evaluated by the pathologist and appear improved in men receiving neoadjuvant hormonal ablation; however, the risk of biochemical relapse is equivalent to those men who do not receive neoadjuvant therapy. Gleason scoring can be difficult in men who have received hormonal deprivation du£ to the noted treatm ent effect in the tissues. Among these men, the Gleason score can appear artificially elevated and it is recommended Gleason score not be assigned.

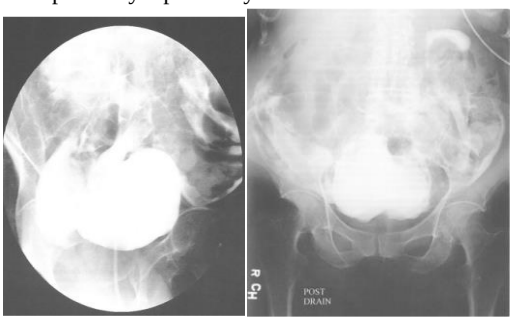
42. The best treatment for a symptomatic 4 mm proximal submucosal ureteral stone fragment is:
A. stent placement.
B. SWL.
C. laparoscopic excision of the stone.
D. laser excision and stent placement.
E. ureteral reconstruction with buccal mucosa graft.
ANSWER=D
Submucosal stones, defined as calculi iatrogenically displaced into the wall of the ureter, can be problematic. Removal of such stones is difficult, as ureteral perforation with urinoma can occur, and fibrosis may result. If submucosal stones are identified, laser excision followed by ureteral stent placement is recommended. If laser excision fails, the next step for a symptomatic submucosal stone is resection of the affected segment of ureter w ith repair. SWL will not be effective in the treatm ent of a submucosal stone. Laparoscopic excision of the stone fragm ent w ithout repair of the ureter will not be an adequate treatm ent option since the likely associated ureteral stricture w ill not be addressed. Buccal mucosa graft would only be used in complex cases of ureteral stricture disease. Stent placement would only provide tem porary relief from obstruction, and would not address the issue of the submucosal stone.

43. A five-year-old girl is wet within the first few minutes after voiding. She has mild perineal erythema. The next step is:
A. repositioning on the toilet.
B. use a timer to assure five minutes on toilet.
C. uroflow and PVR.
D. oxybutynin and timed voiding.
E. VCUG.
ANSWER=A
Post-void dribbling is most commonly due to vaginal pooling of urine which leaks out once the patient stands or walks. Vaginal reflux is seen by VCUG in many young girls. Immediate improvement may be seen by undertaking maneuvers to facilitate vaginal drainage while still on the toilet; this includes straddling the toilet seat, sitting backward on the toilet seat, leaning forward after voiding, suprapubic compression before getting up, and careful tissue drying after the above maneuvers.

44. A six-year-old asymptomatic boy with PUV had neonatal valve ablation. He has worsening bilateral hydronephrosis and his serum creatinine has increased from 0.6 to 1.0 mg/dL over the past nine months. Videourodynamics reveal no VUR or evidence of residual valves, and filling pressures of 15 cm H20 at 220 mL and 32 cm H20 at 280 mL. The next step is:
A. voiding diary.
B. antimuscarinic.
C. alpha-blocker.
D. nocturnal indwelling catheter.
E. initiate CIC every four hours.
ANSWER=A
Children with correction of severe obstructive uropathy w ill sometimes demonstrate a persistent decrease in renal concentrating ability. This tends to worsen with growth and may lead to very high obligate urine output. This output can, at times, be so high that children cannot void frequently enough to maintain safe intravesical pressures; hydronephrosis and rising creatinine will ensue. This boy appears to void w ithout obstruction. He does have reduced bladder compliance (as many valve patients do), and his safe zone for filling is equal to 220 mL. However, if his urine output is very high, then he will reach this capacity very quickly after voiding. While he may eventually need timed voiding, antimuscarinic medication, CIC, or a nocturnal indw elling catheter, none of these can be used in a logical way w ithout first knowing more about the patient's daily urine volume. An alpha-blocker is not indicated in this patient.

45. A 77-year-old woman undergoing TURBT for multiple papillary tumors has fat near the trigone and left ureteral orifice in an area of deep resection. She has abdominal distension and intraoperative cystogram is shown. The next step is:
A. complete TURBT.
B. terminate procedure and place 22 Fr catheter.
C. left ureteral stent.
D. percutaneous drain.

E. exploratory laparotomy.



ANSWER=E

The images demonstrate a large intraperitoneal bladder perforation with extravasation of contrast posterior to the bladder (image 1) that also tracks around the bowel into the left upper quadrant (image 2). At the time of a recognized bladder perforation during TURBT, the remainder of the resection should be aborted. Although extraperitoneal perforations may be managed successfully with only urethral catheterization, evidence of a significant intraperitoneal leak-should prompt open repair of the bladder injury. Placement of a percutaneous drain alone is insufficient w ith the large perforation. Placement of a left ureteral stent is not indicated as the fluid on the left side of the abdomen is not due to obstruction/hydronephrosis.

46. A four-year-old girl voids normally but is continuously wet. A renal ultrasound shows normal-appearing kidneys bilaterally. The next step is:

A. MAG-3 renal scan.
B. VCUG.
C. MRI scan.
D. cystoscopy and vaginoscopy,
E. retrograde pyelogram.
ANSWER=C

The clinical scenario of dribbling despite normal voiding creates suspicion of an ectopic ureter. Often the ectopic upper pole moiety of the duplex kidney is very small and not easily identified on ultrasound. In these cases, an MRI scan or MR urogram are the best imaging tests to localize the d ifficult to identify small, dysplastic upper poles and their ureters. MR urogram is not always required since the T2-weighted images of a standard MRI are particularly suited for finding and defining fluid-filled structures like an ectopic ureter. Sagittal imaging may demonstrate the exact term ination of the ectopic ureter. DMSA scan is most useful in the identification of small ectopic kidneys but is unlikely to be useful when the renal ultrasound is normal. If the moiety is small, a MAG-3 renal scan will appear normal because the upper pole often has no function and the lower pole will not deviate. VCUG will sometimes show VUR into an ectopic ureter depending on the location of the orifice. Cystoscopy and vaginoscopy can identify the ectopic orifice, but the orifice is often d ifficu lt to identify endoscopically and is not as sensitive as an MRI scan. Retrograde pyelogram is also limited due to difficulty in identifying the ectopic ureteral orifice.

47. In a man with high risk prostate cancer undergoing radical prostatectomy, the primary landing zone for nodal metastases is:

A. external iliac.
B. obturator.
C. internal iliac.
D. common iliac.
E. presacral.
ANSWER=C

The internal iliac lymph nodes (hypogastric) have the highest independent risk of being positive. The external iliac, obturator, common iliac, and presacral areas are all regions with potential for lymph node metastases but at lower rates.

48. Three months following a CVA, a 67-year-old woman develops urgency urinary incontinence. Videourodynamic testing will most likely show detrusor overactivity and simultaneous:

A. involuntary smooth and striated sphincter contraction.
B. involuntary smooth sphincter contraction and striated sphincter relaxation.
C. involuntary smooth sphincter relaxation and striated sphincter contraction.
D. involuntary smooth and striated sphincter relaxation.
E. sphincter bradykinesia.
ANSWER=D

Typically, CVA is associated with neurogenic detrusor overactivity (DO) with appropriate relaxation of the bladder outlet (both smooth and striated sphincteric mechanisms) during involuntary bladder contractions. External sphincter contractions may be seen with DO as a voluntary normal guarding reflex. DO associated fw ith detrusor external sphincter dyssynergia is commonly seen with suprasacral spinal cord injury and in 25-40% of patients with multiple sclerosis. Sphincter bradykinesia is not typically seen w ith CVA and is associated with Parkinson's disease.

49. A 13-year-old girl with spina bifida was augmented five years ago and is on CIC and antibiotic prophylaxis. She recently developed incontinence and has had two UTIs. The next step is:

A. change antibiotic prophylaxis.
B. instill antibiotics into bladder during CIC.
C. observe CIC technique and obtain catheterization diary.
D. bladder ultrasound.
E. videourodynamic evaluation.
ANSWER=C

The new onset of a UTI and incontinence in an augmented patient with a neurogenic bladder raises concerns. The first concern in a patient at this age, going through puberty, should be determ ining whether she is doing CIC as she has been instructed. It is very common for teenagers at this developm ental stage to become non- com pliant w ith CIC due to peer pressure and the desire to be "norm al". Their attitude toward authority and supervision is also changing. Teenagers are commonly untruthful when questioned about CIC. For this reason, it is very im portant to first determine whether CIC is really being done appropriately. If CIC is not a problem, then the evaluation for bladder stones, changing bladder storage dynamics, and other issues should be addressed.

50. A 60-year-old healthy woman with recurrent UTIs has free air in the bladder and a thickened bladder wall adjacent to a loop of

thickened colon seen on CT scan. Cystoscopy demonstrates erythema in the bladder wall with no clear fistula. The next step is:
A. antibiotic suppression.
B. cystogram.
C. CT scan with small bowel follow through.
D. MRI scan.
E. general surgery consult/exploratory laparotomy.
ANSWER=E
Cross-sectional imaging, especially CT scan, has become the imaging m odality of choice to demonstrate a vesicoenteric fistula. CT or MRI scans may localize the fistula tract as well as the involved segment of bowel. The triad of findings on CT that are suggestive of colovesical fistula consists of (1) bladder wall thickening adjacent to a loop of thickened colon, (2) air in the bladder (in the absence of previous lower urinary tract m anipulation), and (3) presence of colonic diverticula. Cystoscopy has the highest yield in identifying a potential lesion, w ith some type of abnorm ality noted on endoscopic examination in more than 90% of cases. However, the findings on cystoscopy are often nonspecific and include localized erythema and papillary or bullous changes; a definitive diagnosis by cystoscopy can be made in only 35% to 46% of cases. This patient has clear evidence of a vesicoenteric fistula and further diagnostic studies are not indicated. Should she be a poor surgical risk, long-term antibiotics could be used. Definitive colonic resection of presumed diverticulosis and repair of fistula is indicated with exploratory laparotom y. General surgery may wish to proceed w ith colonoscopy/barium enema to evaluate the extent of the affected segment or rule out malignancy.

51. A 33-year-old man with history of depression treated with a monoamine oxidase inhibitor complains of premature ejaculation. The recommended treatment is:
A. topical anesthetic spray prior to coitus.
B. tramadol prior to coitus.
C. daily clomipramine.
D. daily sertraline.
E. daily paroxetine.
ANSWER=A
Selective serotonin reuptake inhibitors (SSRIs) such as paroxetine, sertraline, clomipramine, and tram adol have all been shown to improve prem ature ejaculation. However, all four of these medications are contraindicated with the use of a monoamine oxidase inhibitor (MAOI). The only pharmacological option for this patient is topical anesthetic spray. Behavioral therapy would be an alternative to pharmacological management.

52. A 60-year-old man is referred by his internist for evaluation of an elevated PSA. He has no voiding symptoms and his DRE is normal. The laboratory results are not in your chart. You should:
A. call the internist and ask for the results.
B. ask the patient to reschedule and return with his results.
C. obtain a release of information and fax to the internist's office.
D. assure that the patient signed a protected health information form at registration.
E. draw a PSA.
ANSWER=A
A referring health care provider is perm itted to disclose protected health inform ation about an individual to a health care provider for that provider's treatm ent of the individual. A release of inform ation is not required. Professionalism precludes the inconvenience of rescheduling the patient for another appointm ent. Redrawing the PSA is potentially more efficient (although results will not be im mediately available) but is not cost-effective. The protected health information form that is signed in your office only affirms that the patient is aware of your privacy policies and does not give permission for release of inform ation.

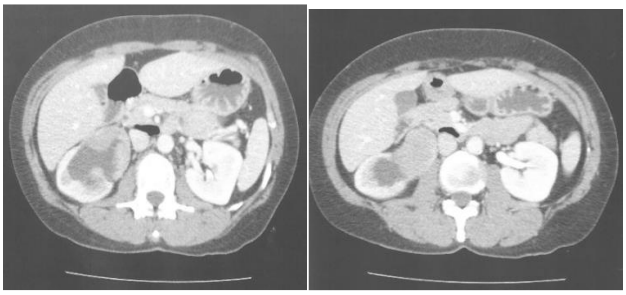
53. A 47-year-old man has a 3 cm hyperechoic renal lesion on ultrasound. The MRI sequence most likely to confirm the diagnosis of angiomyolipoma is:
A. T1-weighted image without gadolinium.
B. T1-weighted image with gadolinium enhancement.
C. T2-weighted image with fat suppression.
D. T2-weighted image with gadolinium enhancement.
E. magnetic resonance angiography.
ANSWER=C
For a fat-containing tumor, a T2-weighted image w ith fat suppression is most likely to identify macroscopic fat and confirm the diagnosis of an angiomyolipoma (AML). A T1-weighted image w ithout gadolinium is insufficient to confirm the diagnosis of AML. Lesions that enhance w ith gadolinium on T l-w eighted images are typically consistent w ith m alignant lesions. Enhanced T2-weighted imaging is rarely obtained. Magnetic resonance angiographs are rarely necessary for the diagnosis of a renal mass and would not be helpful in this situation

54. A 72-year-old woman has urgency urinary incontinence. Examination demonstrates minimal prolapse, no leakage with cough, and vaginal atrophy. In addition to timed voiding and dietary modification, the next step is:
A. pelvic floor muscle training.
B. vaginal estrogen.
C. oral estrogen.
D. duloxetine.
E. periurethral injection.
ANSWER=A
Pelvic floor muscle training has been shown to be effective for the treatm ent of both stress urinary incontinence (SUI) and urgency urinary incontinence (UUI) in women and is considered first-line therapy. Vaginal estrogen may improve her vaginal atrophy and genitourinary symptoms of menopause; however, neither oral nor vaginal estrogen has been shown to improve incontinence (even in the setting of vaginal atrophy). Duloxetine, a serotonin reuptake antagonist, may have a positive impact on SUI, but has not been shown be effective for UUI. Duloxetine is not approved for use in the United States for the treatm ent of SUI. A periurethral injection may be useful in elderly patients (or others looking to avoid surgery) with SUI but would not treat this patient's symptoms.

55. A 27-year-old man with a C5 spinal cord injury has recurrent problems with sediment and clogging of his indwelling urethral catheter despite frequent catheter changes. The next step is:

A. urine culture to identify urease producing organism.
B. daily acetic acid irrigation.
C. placement of a large lumen suprapubic tube.
D. non-contrast CT scan.
E. cystoscopy.
ANSWER=A
Simple measures, such as catheter irrigations (e.g., acetic acid) and placement of a larger diam eter suprapubic tube, may tem porize but not completely address the underlying problem of recurrent catheter encrustation w ith sediment. Catheter encrustation is attributed to bacterial biofilm, particularly biofilm s made by urease producing bacteria such as Proteus mirabilis. Urine culture is the appropriate next step. If a urease producing organism is identified, both treatm ent of the offending organism and evaluation for the presence of bladder or upper tract stones (e.g., with cystoscopy, non-contrast CT scan) that may serve as a nidus for bacterial infection is necessary.

56. A 55-year-old woman with a history of ovarian cancer is evaluated for gross hematuria. She has a family history of intestinal cancer. CT scan is shown. Genetic testing is most likely to reveal a mutation in:
A. BRCA1
B. MSH2.
c. PTEN.
D. TP53.
E. VHL.



ANSWER=B
The patient has evidence of a right upper tract urothelial carcinoma, causing obstruction with resultant hydronephrosis and renal atrophy. Her personal and family history of cancers along with an upper tract tum or are suggestive of Lynch syndrome, also known as hereditary non-polyposis colorectal cancer (HNPCC). This is caused by mutations in mismatch repair genes which include MLH1, MSH2, MSH6, and PMS2. These patients are at risk of developing colorectal cancer, endometrial carcinoma, digestive adenomas, and ovarian serous cystadenocarcinoma. The other genes listed are associated with other heritable cancers: breast and ovarian cancer (BRCA1); hamartoma, endometrial, and kidney (PTEN, Cowden syndrome); breast cancer, osteosarcoma, and soft tissue sarcoma (TP53, Li-Fraumeni syndrome); renal cell carcinoma, pancreatic neuroendocrine, hemangioblastoma, and pheochromocytoma (Von Hippel-Lindau syndrome).

57. A 65-year-old man has symptoms of cystitis, left flank pain, and fever to 39° C. Urinalysis reveals pyuria and culture shows a pan-sensitive E. coli. One month after appropriate antimicrobial therapy, he is asymptomatic and repeat urinalysis and midstream culture are negative. PVR is 45 mL. The next step is:
A. observation.
B. complete urodynamic studies,
C. prostatic localization cultures,
D. trimethoprim/sulfamethoxazole prophylaxis.
E. CT urogram and cystoscopy.
ANSWER=E
This man presents with symptoms of pyelonephritis. While uncomplicated cystitis in a young sexually active male may not require investigation beyond a follow -up urine culture, a complicated UTI in an older male warrants urologic evaluation, such as CT urogram and cystoscopy due to the higher incidence of associated urologic abnormalities, such as obstruction from either urethral or ureteral strictures, tumor, or stones. Observation is incorrect. Localization cultures might be considered as part of a urologic evaluation but are not sufficient as isolated tests in the pfesence of a complicated febrile UTI. There is no justification for antim icrobial prophylaxis or urodynamic studies at this time.

58. Two years after mid-urethral synthetic sling, pelvic examination of a 75-year-old woman reveals extrusion of a small amount of mesh along her anterior vaginal wall. She is continent and denies any other urinary or vaginal complaints. She is not sexually active. Urinalysis is normal. The next step is:
A. observation.
B. removal of extruded mesh.
C. removal of entire mid-urethral sling.
D. oral estrogen.
E. removal of exposed mesh and simultaneous sling replacement.
ANSWER=A
As the patient is asymptomatic, intervention is not required at this time. Extrusions that are larger or symptomatic should be treated. Transvaginal estrogen is thought to promote vaginal healing. Oral estrogen therapy, however, is not helpful in this scenario. Removal of the entire m id-urethral sling is not required for a small exposure of mesh, may be technically challenging, and may lead to recurrent stress urinary incontinence. W ith partial sling excision, continence is typically maintained in the m ajority of patients; therefore, replacement of another sling would not be indicated. When a m id-urethral sling is eroded into or involves the urinary tract, it should be treated with removal.

59. Erythropoiesis is stimulated by:
A. hypoxia.
B. increased serum CO2.
C. cardiac erythropoietin production.
D. decreased afferent arteriolar pressure.
E. stimulation of renal medullary collecting duct cells.
ANSWER=A
Red blood cell production is controlled prim arily by erythropoietin production in the kidney. Hypoxia is the primary stim ulant of erythropoietin production. This occurs in the renal interstitial fibroblasts and possibly in renal proximal tubular cells. Erythropoietin stimulates m aturation of erythroid burst-form ing units, which eventually leads to

increased production of RBCs. Erythropoietin production is not stim ulated by either increased C02or decreased afferent arteriolar pressure. Neither the heart nor the renal medullary collecting duct cells produce erythropoietin.

60. In primary hyperaldosteronism, most patients have:

A. hypokalemia.
B. hypernatremia.
C. increased angiotensin II levels.
D. decreased renin levels.
E. significant volume expansion (> 1.5 kg).

ANSWER=D

Although hypokalemia has been classically described as a common finding in primary hyperaldosteronism, in contemporary series, up to 90% of newly-diagnosed patients are normokalemic at the time of diagnosis. In primary hyperaldosteronism, aldosterone increases sodium reabsorption and potassium secretion in the distal nephron. Hypernatremia does not occur as sodium reabsorption is accompanied by water uptake m aintaining isotonicity. At the same time, the resultant volume expansion is limited by m ineralocorticoid escape - the result of which limits volume expansion to approxim ately 1.5 kg or less. In primary hyperaldosteronism, aldosterone secretion is independent of the renin-angiotensin-aldosterone system, and plasma renin levels will be suppressed. This finding is in contrast to patients with secondary hyperaldosteronism, where elevated renin levels are the cause ofelevations in aldosterone secretion. This distinction between plasma renin levels in primary and secondary hyperaldosteronism is a critical concept used when screening for primary aldosteronism. Suppression of renin results in decreased levels of angiotensin II. This is formed when renin cleaves angiotensinogen to angiotensin I, which in turn is cleaved by angiotensin-converting enzyme to angiotensin II.

61. An MRI scan of the head (1.5-Tesla) is recommended for a 44-year-old woman with an InterStim II sacral nerve stimulator. The next step is:

A. tell the patient she cannot have the MRI scan.
B. proceed with MRI scan with neurostimulator turned off.
C. proceed with MRI scan after the magnet switch has been disabled.
D. proceed with MRI scan after removal of lead.
E. proceed with MRI scan following removal of lead and generator.

ANSWER=B

Patients w ith an InterStim® II can have an MRI scan of the head using a 1.5-Tesla machine with the stim ulator turned off. In general, patients with older InterStim® generators may have an MRI scan of the head with the stim ulator turned off and the magnet switch turned off. However, certain serial numbers should not have an MRI scan and this inform ation is readily available on the M edtronic website. MRI scan evaluations of the body are not recommended, though reports have shown this to be safe w ith the im plantable pulse generator and magnet turned off using both 0.6 and 1.5-Tesla machines. This is an emerging technology and new products may be available in the near future with improved MRI com patibility.

62. Following PCNL for recurrent calcium-based stone disease, a 3 mm residual fragment is seen in a lower pole calyx on ultrasound. The next step is:

A. observation.
B. 24-hour urine.
C. stone protocol CT scan.
D. ureteroscopy.
E. SWL.

ANSWER=B

Lower pole residual fragments have a low chance of spontaneously passing. They are also less likely to require intervention as they have a greater tendency to remain asymptomatic in the kidney. A 24-hour urine stone risk profile will help direct medical therapy, especially in a recurrent stone former, in patients with residual fragments after PCNL, those treated with medical therapy had a significantly better stone remission rate (77%) as compared to the control (observation) group (21%). Additionally, residual fragments greater than 2 mm located in the renal pelvis or ureter are independent predictors of a stone event. Ultrasound tends to over-size small renal stones, so there is no need to confirm the presence or size of a small stone in the lower pole, since prevention is the next key step. Further treatment (ureteroscopy or SWL) in the postoperative period for a small residual fragm ent is not necessary at this time; however, long term follow -up is recommended. Additionally, SWL is typically not recommended for very small stones.

63. A 34-year-old man with sickle cell trait and hypertension has recurrent erections lasting two to three hours. He has tried oral sildenafil and baclofen with no improvement. He wishes to remain sexually active. The next step is:

A. oral pseudoephedrine.
B. oral estrogen.
C. oral bicalutamide.
D. daily intracavernous phenylephrine.
E. penile implant.

ANSWER=C

Recurrent prolonged erections (stuttering priapism) in patients with sickle cell disease and trait eventually progress to more significant episodes. Many therapies have been proposed to include oral alpha-adrenergic agents, hormonal therapy with LH-RH agonists/antagonists, and antiandrogens. Intracavernous alpha-agents (phenylephrine) can be used at the time of a prolonged episode but are not used on a daily basis. Oral estrogens have unacceptable adverse effects, including cardiovascular risks, and are not recommended in this setting. Alpha-adrenergic agents should be used w ith caution in patients with hypertension. Oral antiandrogens will also allow this patient to continue to have erections and remain sexually active.

64. A transperitoneal exposure of the right renal hilum requires mobilization of the:

A. stomach,
B. duodenum,
C. hepatocolic ligament,
D. superior mesenteric artery,
E. inferior mesenteric vein.

ANSWER=B

The second (descending) portion of the duodenum is of most importance to the urologist because it lies im mediately anterior to the right renal hilum and pelvis. This portion of the duodenum is frequently mobilized (referred to as a Kocher maneuver) to expose the right kidney during a transperitoneal approach. The second portion also receives the common bile duct and surrounds the head of the pancreas. Stomach m obilization is not necessary for the right renal hilar exposure. Neither the superior mesenteric artery nor inferior mesenteric vein need to be mobilized to expose the right renal hilum. M obilization of the hepatocolic ligam ent will provide exposure to the upper pole of the right kidney, but does not provide access to the hilum of the right kidney.

65. A 58-year-old man is treated with brachytherapy for a T1c, Gleason 7 (4+3) prostate cancer. His pre-treatment PSA was 9 ng/mL. His PSA nadir at two years is 1.0 ng/mL, and his PSA subsequently rises to 4.5 ng/mL over the next year. The factor most predictive of prostate cancer mortality is:

A. PSA nadir.
B. pre-treatment PSA.
C. PSA doubling time.
D. primary Gleason pattern.
E. time interval to recurrence.

ANSWER=C

This patient has met the criteria for failure of his brachytherapy (nadir + 2 hg/mL). Although a PSA nadir of 1.0 ng/mL is associated with a higher chance of failure, it does not necessarily predict survival. The pre-treatm ent PSA, in this case, is favorable and would not predict a poor outcome. Although Gleason score has been associated w ith prostate cancer-specific m ortality, most of the time it has been associated with Gleason scores of 8-10. Short time to recurrence is also unfavorable but not as predictive as PSA doubling time. The short doubling time has been shown in m ultiple studies to be the factor most predictive of prostate cancer-specific m ortality in patients who have a recurrence after definitive local treatment.

66. Four years after successful placement of a sacral neuromodulation device, a 45-yearold woman has recurrence of her voiding symptoms. Interrogation of the device reveals an abnormal impedance in one of four electrodes on the lead and a battery life of eight months. The next step is:

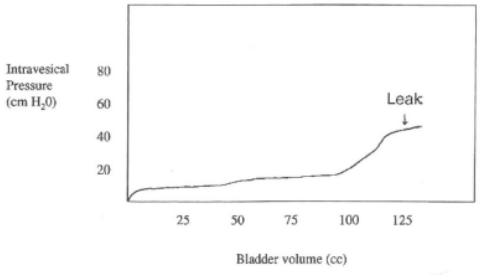
A. add mirabegron.
B. re-program device.
C. place new lead.
D. replace entire device.
E. intradetrusor onabotulinumtoxinA

ANSWER=B

Impedance is an indication of the integrity of a circuit. The range of impedances is generally 400-1500 ohm. High impedances (> 4000 ohms) suggest a disruption in the circuit, called an "open" circuit, and suggest that the electrons are unable to flow. Fractures in the leads or loose connections can create an open circuit. In this case, since the other electrodes have acceptable impedances, reprogramm ing the device using the other electrodes would be the next step. Although the addition of medications or onabotulinum toxinA injection may be helpful, neither may be necessary if reprogram ming provides symptom relief. Surgical revision is not indicated unless all attempts at reprogram m ing have failed.

67. A one-year-old girl with spina bifida has new onset grade 2 hydronephrosis. VCUG demonstrates bilateral grade 4 VUR. CMG is shown. The next step is prophylactic antibiotics and:

A. observation.
B. oxybutynin.
C. CIC.
D. intradetrusor onabotulinumtoxinA.
E. bilateral ureteral reimplant.



ANSWER=C

This child is at risk for upper urinary tract deterioration due to the elevated detrusor LPP. Intervention with CIC is required. The child has a reasonable bladder capacity and anticholinergics are not necessary initially. Reassessment w ith a catheterization diary after starting CIC is needed to determ ine the bladder pressure at the patient'stypical catheterized urine volume. This is most predictive of outcome for success with conservative management and to determ ine the need for antimuscarinics or more aggressive therapy such as onabotulinum toxinA injections. Antimuscarinic therapy (oxybutynin) w ithout CIC would not provide adequate drainage, especially with high-grade VUR. Reimplantation is not warranted at this point without a trial of non-operative management.

68. A 55-year-old healthy man diagnosed with prostate cancer is considering active surveillance. His PSA is 9 ng/mL and his prostate volume is 45 mL with normal DRE. Two of 12 biopsy cores are positive, with 25% of each core demonstrating Gleason 6 (3+3) prostate cancer. The factor that classifies his disease as National Comprehensive Cancer Network (NCCN) low risk as opposed to very low-risk is:

A. age.
B. number of cores with cancer.
C. PSA density.
D. PSA.
E. extent of cancer on biopsy.

ANSWER=C

The NCCN guidelines include a "very low-risk prostate cancer" group that is similar to common inclusion criteria for active surveillance. The criteria include: clinical T1c, PSA less than or equal to 10 ng/mL, PSA density under 0.15 ng/mL/cc, Gleason 6 (3+3) (Grade Group 1), and up to 3 positive biopsy cores w ith no core greater than 50% involvement.

PSA density is one of the strongest predictors of upgrading for men with low-grade prostate cancer undergoing radical prostatectomy or for progression while on surveillance. The PSA density of this patient is 0.2 ng/mL/cc, which places him the the low-risk group, as opposed to the very low-risk group.

69. Neurons in Onuf's nucleus are responsible for:
A. bladder sensation.
B. bladder relaxation.
C. bladder contraction.
D. internal sphincter contraction.
E. external sphincter contraction.
ANSWER=C
The NCCN guidelines include a "very low-risk prostate cancer" group that is similar to common inclusion criteria for active surveillance. The criteria include: clinical T1c, PSA less than or equal to 10 ng/mL, PSA density under 0.15 ng/mL/cc, Gleason 6 (3+3) (Grade Group 1), and up to 3 positive biopsy cores w ith no core greater than 50% involvement. PSA density is one of the strongest predictors of upgrading for men with low-grade prostate cancer undergoing radical prostatectomy or for progression while on surveillance. The PSA density of this patient is 0.2 ng/mL/cc, which places him the the low-risk group, as opposed to the very low-risk group.

70. According to the 2013 AUA Guideline on follow-up for clinically localized renal neoplasms, the recommended surveillance for a pT2NxMx RCC after nephrectomy includes:
A. annual chest x-ray only.
B. abdominal CT scan and chest x-ray at one year only.
C. annual abdominal CT scan and chest x-ray for two years.
D. abdominal CT scan and chest x-ray every 6 months for 3 years.
E. annual abdominal CT scan for five years.
ANSWER=D
The 2013 AUA Guideline for follow -up for clinically localized renal neoplasms recommends in Statement 12 that patients at moderate- to high-risk for recurrence (which includes pT2-4 and any N+ patients) undergo "baseline chest and abdominal scan (CT or MRI) within three to six months follow ing surgery with continued imaging (US, CXR, CT or MRI) every six months for at least three years and annually thereafter to year five. (Recommendation; Evidence Strength. Grade C).

71. A 52-year-old woman has bothersome urinary frequency and urgency incontinence. Examination reveals stage 1 anterior vaginal wall prolapse and loss of urine with cough. Urinalysis and PVR are normal. The next step is:
A. behavioral modification and antimuscarinics.
B. transurethral bulking agent.
C. mid-urethral sling.
D. cystocele repair.
E. mid-urethral sling and cystocele repair.
ANSWER=A
Although this patient has a positive cough stress test, the main com plaint is urgency urinary incontinence and frequency. Therefore, according to the 2014 AUA/SUFU OAB Guidelines, behavioral m odification and pelvic floor muscle training are recommended as first-line treatm ent, with or w ithout pharmacotherapy (antimuscarinics or beta-3-agonist). Despite the fact that she has a positive cough- stress test, she is not reporting subjective stress urinary incontinence (SUI). Thus, therapy such as a bulking agent or sling aimed at treating SUI should not be part of the initial treatm ent plan. Stage 1 anterior vaginal wall prolapse is a normal finding and should not cause any signs of a vaginal bulge; therefore, there is no role for a prolapse repair at this time.

72. During transabdominal exploration for left renal trauma, a large hematoma obscures the aorta. The best anatomic landmark to gain primary control of the renal vessels is the:
A. inferior mesenteric artery.
B. inferior mesenteric vein.
C. left renal vein.
D. superior mesenteric artery.
E. superior mesenteric vein.
ANSWER=B
Identification and control of the renal vessels before opening Gerota's fasciadecreases renal loss. This is done by opening the retroperitoneum over the anterior midline of the aorta just cephalad of the inferior mesenteric artery (IMA) and continue up to the ligam ent of Treitz. One can then follow the anterior aorta from the IMA cephalad. The next vessel one encounters is the left renal vein which generally crosses anterior to the aorta. W hether approaching the right or left kidney, placing a vessel loop around the left renal vein helps, because the left and right renal arteries can be isolated close to their takeoff from the aorta behind the left renal vein. If the aorta cannot be found due to a large throm bus in the retroperitoneum, then the best anatomic landmark to find the anterior surface of the aorta is the inferior mesenteric vein (IMV). Dissection just medial to the IMV allows for dissection through the hematoma which leads to the anterior surface of the aorta. Once the aorta is identified, the remainder of the steps are as described above.

73. Optimization of intravesical mitomycin C administration includes:
A. antibiotic prophylaxis.
B. NSAIDS.
C. urinary alkalinization.
D. hydration.
E. antimuscarinics.
ANSWER=C
The optimal way to administer intravesical mitomycin C includes: elim ination of residual urine, overnight fasting (dehydration), oral sodium bicarbonate (alkalinization to reduce drug degradation), and increasing the drug concentration to 40 mg/20 mL. Antibiotics, NSAIDS, and antimuscarinics do not improve the efficacy of intravesical mitomycin C.

74. The optimal flap to use during transvaginal repair of an apical, post-hysterectomy vesicovaginal fistula high in the vaginal vault is:
A. peritoneal.
B. Martius, based on the posterior labial artery.
C. Martius, based on the external pudendal artery.
D. greater omentum, based on the right gastroepiploic artery.
E. greater omentum, based on the left gastroepiploic artery.

ANSWER=A

A Martius flap is composed of fib ro fatty labial tissue. The blood supply of the Martius flap is from the posterior labial vessels interiorly, external pudendal artery superiorly, and obturator artery laterally. The Martius flap is optim ally used for more distal fistulae involving the bladder neck, trigone, and urethra. M obilization and tunneling of a Martius flap to reach a fistula at the level of a well-supported vaginal apex can be challenging and may compromise its blood supply. Therefore, a peritoneal flap is preferred for patients w ith a vesicovaginal fistula in this location. The layer of peritoneum can often be dissected just beyond the bladder in the anterior cul-de-sac. The peritoneum is not opened and once mobilized it can then be placed over the fistula repair as another layer. Vascularized flaps involving the greater omentum can be used for abdominal repairs of a vesicovaginal fistula but cannot be perform ed with a transvaginal approach.

75. A ten-year-old girl undergoes uncomplicated bilateral ureteral reimplantation for VUR with recurring febrile UTIs. She is treated for C. difficile colitis with oral metronidazole after surgery. Two weeks later, she has fever and abdominal pain. WBC is 20,000/cu mm, and serum creatinine 1.7 mg/dL. Renal ultrasound is normal. The next step is:

A. oral vancomycin.
B. I.V. metronidazole.
C. oral vancomycin and I.V. metronidazole.
D. stool transplant.
E. rectal instillation of vancomycin.

ANSWER=A

This patient has clinical symptoms consistent with the recurrence of C. difficile colitis follow ing appropriate treatm ent with oral metronidazole. Patients presenting with recurrence are treated based on symptom severity, w ith similar guidelines for initial infection. W ith WBC > 15,000/cu mm and elevated serum creatinine > 1.5x baseline, this patient has a "severe" infection and should be managed with oral vancomycin. If the infection is severe and complicated (hypotension, shock, ileus, megacolon), I.V. m etronidazole should be added to the oral vancomycin. If there is severe ileus, then rectal instillation of vancomycin should be considered. Stool transplant is recommended only for m ultiple recurrences.

76. During mid-urethral sling placement, profuse vaginal bleeding is noted after suprapubic trocar passage. The next step is:

A. abandon procedure and place vaginal packing.
B. complete surgery and place vaginal packing.
C. obtain control of bleeding vaginally and proceed with sling.
D. obtain control of bleeding abdominally and proceed with sling.
E. angiographic embolization.

ANSWER=B

Bleeding can be encountered during sling procedures, especially at the time of needle passage through the endopelvic fascia. This bleeding will usually abate.on its own over time. If it does not, then the appropriate management would be to complete the surgery, close the vagina and pack the vagina which leads to tam ponade of the bleeding and adequate control in most cases. Attem pts to control the bleeding with further vaginal dissection is not recommended since the exact site of bleeding is often hard to find and further dissection may only exacerbate the situation. Angiographic em bolization and/or abdominal exploration Would be recommended for patients that continue to bleed despite a period of compression which would suggest injury to a major vessel.

77. A 64-year-old man has a 90-degree dorsal penile curvature and a Sexual Health Inventory for Men (SHIM) score of 15 on sildenafil. The next step is:

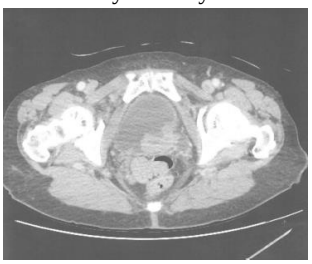
A. penile plication.
B. incision and grafting procedure.
C. excision and grafting procedure.
D. penile prosthesis.
E. penile prosthesis with modeling.

ANSWER=E

This patient has a significant penile curvature of 90 degrees and a Sexual Health Inventory for Men (SHIM) score of 15 which suggests moderate erectile dysfunction (ED). Correcting only the penile curvature w ill not address the ED. Even w ith the penile prosthesis, the curvature will need to be addressed. Curvature during penile prosthesis surgery can be corrected w ith adjunct maneuvers, including modeling, plaque excision, and grafting, plication, or corporal incisions if needed.

78. A 75-year-old woman undergoes TURBT of the mass seen on the CT scan as shown. Pathology shows muscle-invasive urothelial carcinoma with areas of small cell carcinoma. Creatinine is 1.1 mg/dL and metastatic evaluation is negative. The next step is:

A. neoadjuvant gemcitabine and cisplatin.
B. neoadjuvant pembrolizumab.
C. 5-FU, mitomycin C, and XRT.
D. cisplatin, etoposide, and XRT.
E. radical cystectomy.



ANSWER=D

The treatm ent in this patient is driven by the presence of the small cell carcinoma com ponent, which is a sub-type of neuroendocrine tumors (along with large cell carcinoma and carcinoid). These typically behave in a more aggressive fashion and have histologic and genomic features similar to small cell carcinomas of other organs, such as the lung and prostate. Aggressive, m ulti-m odal therapy is warranted for localized disease as in this case and treatm ent is not per typical urothelfal algorithms. Thus, up-front cystectomy is not indicated. Similarly, chemotherapeutic regimens are based on the treatm ent of small cell carcinoma of the lung, and thus, gemcitabine is not included. Pembrolizumab has been approved for advanced small cell lung cancer, but has not demonstrated efficacy in the neoadjuvant setting. Chemotherapy given prior to XRT in this situation would be cisplatin and

etoposide rather than the com bination of 5-FU and mitomycin C, which is a standard for urothelial carcinoma of the bladder.

79. A ten-year-old boy with bladder exstrophy underwent bladder neck reconstruction, ileocystoplasty, and appendicovesicostomy two years ago. He complains of intermittent abdominal pain and hematuria. A KUB and ultrasound reveal multiple bladder calculi measuring 1-2 cm each. The best treatment is:

A. bladder irrigation.
B. SWL.
C. transurethral cystolitholapaxy.
D. percutaneous cystolithotomy.
E. convert to ileal conduit.
ANSWER=D

Bladder calculi occur in 30-50% of patients who undergo enterocystoplasty. In this patient, the size and number of stones make it unlikely that irrigation w ill clear the stones. SWL is not effective in this setting. Because of the previous bladder neck reconstruction, endoscopic lithotripsy (cystolitholapaxy) through the urethra or appendix channel is not the best choice. Cystolithotomy is an efficient approach to elim inate the stones completely and can usually be accomplished percutaneously. Larger stones may require open cystolithotomy. Although stones are common, this does not require abandoning the reconstruction and converting to a supravesical diversion

80. A 71-year-old man has newly diagnosed CIS of the bladder. BCG is currently unavailable due to a national shortage. The next step is:

A. surveillance cystoscopy in three months.
B. induction BCG when available.
C. intravesical mitomycin-C.
D. intravesical valrubicin.
E. radical cystectomy.
ANSWER=C

Historically, there have been shortages of BCG; therefore, there is a need for alternatives for bladder cancer patients. The AUA recommends intravesical mitomycin-C as the preferable alternative in this scenario (six week induction and monthly maintenance), w ith other alternatives being gemcitabine, epirubicin, docetaxel, valrubicin, or sequential therapy. Given the high-risk nature of urothelial CIS, a delay in treatm ent or surveillance is not advisable. Valrubicin is approved for BCG-refractory CIS in patients who are not candidates for cystectomy. In the absence of other adverse features (e.g., T1 disease), radical cystectomy is not the preferred initial therapy.

81. A 78-year-old man has a parastomal hernia two years after radical cystectomy and ileal conduit. The most likely predisposing factor is:

A. advanced age.
B. history of tobacco abuse.
C. history of radiation.
D. use of neoadjuvant chemotherapy.
E. ostomy lateral to the rectus muscle.
ANSWER=E

Parastomal hernias arise when a gap exists between the ileum (or whatever intestinal segment is chosen) forming the stoma and the surrounding fascia. Most commonly, incorrect placement of the stoma lateral to the rectus muscle results in a gradual opening of the surrounding fascia. Sjodahl and colleagues evaluated 130 patients w ith intestinal stomas and found the incidence of parastomal hernia to be 2.8% in patients with stomas brought through the rectus muscle compared with 21.6% in patients whose stomas were placed lateral to the rectus muscle. To m inimize the chances of a parastomal hernia, the surgeon should ensure that the entire fascial opening is within the body of the rectus muscle. Adequate mesenteric blood supply to the distal (stoma) end of the conduit is required to avoid devascularization of the bowel segment. Although such devascularization can result in acute necrosis or chronic ischemia (which in turn can lead to stomal stenosis), the blood supply does not have a role in the development of a parastomal hernia. The use of irradiated bowel also may predispose to conduit ischemia but has not been shown to predispose to hernia form ation. Although some have demonstrated an association between obesity, wound infection, steroids, m alnutrition, and abdom inal distention and the developm ent of a parastomal hernia, tobacco abuse and a history of COPD have not been found to be significant predisposing factors. Neither neoadjuvant chemotherapy nor age is associated w ith increased risk of parastomal hernias.

82. A 65-year-old woman undergoes a robotic sacrocolpopexy with polypropylene mesh using multifilament permanent sutures. Six weeks later, she develops low-grade fevers and difficulty ambulating. The next step is:

A. reassurance.
B. antibiotics.
C. MRI scan.
D. transvaginal ultrasound.
E. mesh removal.
ANSWER=C

This is likely a case of L5-S1 discitis'due to placing sutures through the L5-S1 disc space. The dissection during minimally-invasive sacrocolpopexy has been implicated as being too proximal on the sacral prom ontory making this scenario more likely. The proper location of the sutures should be into the S1 location of the anterior spinous ligament. Use of m ultifilam ent sutures may be associated with the developm ent of discitis and is used less frequently now due to this complication. Given that six weeks have gone by, reassurance is not the best option and diagnosis with MRI imaging should be performed. Antibiotics w ill not improve this non- infectious adverse event. A transvaginal ultrasound w ill not detect the inflam m ation that is present near the disc space. Mesh removal is not warranted at this juncture until a definitive diagnosis is established. Moreover, additional evaluation and treatm ent by other specialists (pain management, neurology) is warranted prior to mesh removal.

83. During robotic prostatectomy, a periumbilical trocar is placed. Brisk arterial bleeding is noted around the port site. Bleeding subsides with anterior angulation of the trocar for 15 minutes but resumes once the trocar is manipulated. The next step is:

A. upsize trocar.
B. cauterization of peritoneal edges.
C. remove trocar and cauterize the tract.
D. utilize a port closure device.
E. open exploration.
ANSWER=D
In this scenario, a branch of the epigastric artery itself has likely been injured during trocar placement. Despite conservative measures, the bleeding continues, and unlike a venous injury, the arterial bleeding is not likely to stop w ithout formal ligation or cauterization. Hence, upsizing the trocar w ill not stop arterial bleeding. The best next step is to utilize a port closure device such as the Carter-Thomason to pass a suture alongside the trocar tract and secure the bleeding vessel. Sometimes, a figure of eight closure is required to stop the bleeding. Attem pts at cauterization are often difficult as the ends of the bleeding vessels retract into the soft tissues making identification difficult. Once the bleeding vessel is controlled, the operation can be resumed w ith re-evaluation of this trocar site at the end of the operation. If these measures fail, an open exploration may be required.

84. A 70-year-old man is undergoing radical cystectomy and orthotopic urinary diversion for muscle-invasive high-grade urothelial carcinoma. During lymphadenectomy, an unexpected 1.5 cm external iliac lymph node is confirmed to be a metastasis. The next step is:
A. abort surgery and treat with chemotherapy and XRT.
B. abort surgery and treat with chemotherapy followed by cystectomy.
C. perform lymphadenectomy and treat with chemotherapy and XRT.
D. complete surgery and perform ileal conduit.
E. complete surgery as planned.
ANSWER=E
At the time of radical cystectomy, suspicious lymph nodes can be encountered. Approxim ately 25% of patients will ultim ately have positive lymph nodes at the time of radical cystectomy. If the suspicious node(s) can be safely resected and the volume of suspicious lymph nodes is lim ited, it is reasonable to continue the cystectomy and orthotopic urinary diversion. The patient will benefit from the local control of the lymphadenectomy and cystectomy. There is no evidence that stopping surgery and treating w ith chemotherapy or chemotherapy and XRT is superior to completing the cystectomy. Positive lymph nodes are not a contraindication to orthotopic urinary diversion.

85. An 88-year-old man with advanced Parkinson's disease and a long-standing history of LUTS develops urinary retention. Pressure flow study shows a detrusor pressure of 8 cm H20 with a maximum urinary flow rate of 2 mL/sec. DRE reveals a 40 gm prostate. The next step is:
A. bethanechol.
B. CIC.
C. suprapubic tube.
D. sacral neuromodulation.
E. TURP.
ANSWER=C
This man has a low-pressure, low -flow pattern on his pressure flow study. While long-standing BPH may have contributed to his retention, his current case of em ptying/voiding failure is not due to obvious bladder outlet obstruction. Instead, an underactive detrusor is present. There is essentially no reproducible urodynamic data that support the use of bethanechol in any specific category of patients. Additionally, the potential side effects of cholinom im etic drugs include: flushing, nausea, vom iting, diarrhea, gastrointestinal cramps, bronchospasm, headache, salivation, sweating, and difficulty w ith visual accommodation. While sacral neurom odulation is approved for non-obstructive urinary retention, there is limited evidence for its efficacy in the patient with Parkinson's disease (PD) and operating the controller may be a challenge for someone with advanced neurologic disease. Similarly, CIC would achieve efficient bladder emptying, but may be difficult to perform for someone w ith advanced PD. Surgical therapy to reduce outlet resistance via TURP is not contraindicated in patients w ith PD who are obstructed. However, a PD patient w ith poorly sustained bladder contractions is less likely to achieve successful em ptying w ith this therapy. This leaves suprapubic tube as the most viable option.

86. A 22-year-old woman has passed two calcium phosphate stones. Her 24-hour urine collection demonstrates: volume 1.89 L; citrate 145 mg (normal > 450 mg); and pH 6.7 (normal 5.8-6.2). Her serum potassium is 3.3 mEq/L, chloride is 109 mEq/L, and bicarbonate is 21 mEq/L. The next step is:
A. chlorthalidone.
B. potassium chloride.
C. potassium citrate.
D. sodium bicarbonate.
E. sodium citrate.
ANSWER=C
The patient has distal renal tubular acidosis (dRTA) based on these laboratory studies. Potassium citrate is the most appropriate initial treatm ent of this condition. Chlorthalidone is used for hypercalciuria. Potassium chloride can replete potassium losses associated with thiazide-therapy, but has no role in the treatm ent of dRTA. Sodium bicarbonate and sodium citrate will both correct the underlying acidosis, but the sodium load is undesirable, and, therefore, not first-line therapy.

87. Following an MVC, a patient has a pelvic fracture. Urethral catheter placement returns bloody urine. CT cystogram demonstrates an extraperitoneal bladder injury. Non-operative management of the bladder injury can be pursued in the presence of:
A. a membranous urethral injury.
B. a bladder neck injury.
C. a rectal injury.
D. clot retention.
E. an intraperitoneal bladder injury.
ANSWER=A
Extraperitoneal bladder injuries can be managed non-operatively with catheter drainage, except in the presence of bladder neck injury, rectal injury, or clot retention. Additionally, all intraperitoneal bladder injuries should be repaired. If a catheter has been successfully placed across a membranous urethral injury as in this patient, then there is no need for

acute surgery. However, if a catheter could not be placed across the membranous urethral injury, then a suprapubic catheter should be placed, and it would be reasonable to repair the bladder at the same time.

88. An adult patient with acute renal failure has the following laboratory results: urine sodium 140 mEq/L (normal 20-40 mEq/L), plasma sodium 140 mEq/L, urine creatinine 60 ng/dL (normal 20-30 ng/dL), and plasma creatinine 3 ng/dL. The most likely cause of renal failure is:

A. dehydration.
B. sepsis.
C. aminoglycoside toxicity.
D. urinary retention.
E. NSAID toxicity.
ANSWER=D

Fractional Excretion of Sodium (FENA) is calculated as follows: FENA = (Plasma Creatinine x Urine Sodium) / (Plasma Sodium x Urine Creatinine). A FENA of 4% is consistent with postrenal causes of acute renal failure. Values between 1-4% suggest intrinsic causes of acute renal failure. In this case, the FENA is 5% which indicates a post-renal obstruction. Of the choices listed, urinary retention is the only etiology that would result in bilateral postrenal obstruction.

89. A 34-week gestation male fetus has worsening bilateral hydronephrosis and new bilateral ureteral dilation with normal amniotic fluid. The bladder is full with a wall thickness of 5 mm. The next step is:

A. renal ultrasound at one month after delivery.
B. renal ultrasound and VCUG after delivery.
C. renal scan after delivery.
D. early delivery.
E. fetal MRI scan.
ANSWER=B

There is no role for early delivery in the setting of normal amniotic fluid volume. In terms of evaluation, this patient is at risk of UTI because of high-grade kidney dilation, ureteral dilation, and increased bladder wall thickness. Because of male gender, the diagnosis of bladder outlet obstruction, most commonly posterior urethral valves, should be excluded prior to discharge with renal ultrasound and VCUG. Fetal MRI scan would not impact decision making during pregnancy at this juncture for counseling regarding intervention or term ination of pregnancy. Finally, a renal scan would not be in order at this stage, but may have a role in follow -up at some point to determine renal function and/or ureteral drainage.

90. A 40-year-old man with ESRD requiring dialysis has muscle weakness. Serum potassium is 8 mEq/L. Serum potassium is most quickly lowered with:

A. Kayexalate via NG tube.
B. I.V. calcium gluconate.
C. I.V. bicarbonate.
D. I.V. glucose.
E. I.V. insulin and glucose.
ANSWER=E

Calcium gluconate is indicated in the treatm ent of hyperkalemic emergencies because its electrophysiologic effect prevents cardiac arrest; however, it does not actually lower serum potassium. Kayexalate is only an effective transfer resin in the rectum, and as such, does not work rapidly when administered orally. Sodium bicarbonate favors potassium uptake by cells but is minim ally effective in patients with ESRD. Glucose and insulin lower the potassium concentration within minutes. Insulin acts on the sodium potassium ATPase to promote cellular uptake of potassium. The glucose is administered to avoid hypoglycemia.

91. A four-year-old girl has recurrent UTIs, urgency, frequency, and nocturnal enuresis. Ultrasound is normal and a VCUG shows a spinning top urethra, a small capacity bladder, and grade 2 right VUR. The next step is prophylactic antibiotics and:

A. timed voiding.
B. biofeedback.
C. antimuscarinics.
D. DDAVP.
E. endoscopic correction of VUR.
ANSWER=C

UTIs in this age group are often associated with bladder dysfunction. Cystoscopy and urethral calibration have not been shown to be beneficial, even with a "spinning- top" urethra, which is thought to be related to external sphincter overactivity. Alpha-blockers may be indicated for children who are having problems with relaxation of the internal sphincter. The nocturnal enuresis may be primary, but there is likely a secondary component related to a small functional bladder capacity, so DDAVP would not be indicated, especially in this age group. Antimuscarinics would be useful in treating this patient's overactive bladder dysfunction and im proving the spontaneous resolution rate for the low-grade reflux. In both open and endoscopic series, there is an increased surgical failure rate for reflux resolution with lower urinary tract dysfunction, so it is recommended that attempts at treating this dysfunction be performed initially before surgical intervention is considered. Surgical intervention is more likely to be successful after bladder rehabilitation. Biofeedback could be an alternative in the older child and following a uroflow-EMG study confirm ing detrusor-sphincter dyssynergia.

92. After resolution of spinal shock, men with a sacral spinal cord injury have:

A. no spontaneous erectile function.
B. reflexogenic and psychogenic erections.
C. preserved reflexogenic erections but no psychogenic erections.
D. no reflexogenic erections but preserved psychogenic erections.
E. a decreased response to PDE-5 inhibitors.
ANSWER=D

Patients with sacral spinal cord injury retain psychogenic erectile ability even though reflexogenic erections are abolished. These cerebrally-elicited erections are found more frequently in patients with lower motor neuron lesions below T12. Psychogenic erections do not occur in patients with lesions above T9 and the efferent sympathetic outflow is thought to be at levels T11 and T12. Thus, this patient would be able to obtain spontaneous and psychogenic erections but not reflexogenic erections.

There is no reason why he would have a decreased response to PDE-5 inhibitors.

93. A 45-year-old man with LUTS has an AUA Symptom Score of 21 despite tamsulosin. He has a benign 25 gm prostate and his urinalysis is normal. A uroflow study reveals: maximum flow rate of 8 mL/sec, voided volume of 150 mL, and PVR of 95 mL. The next step is:

A. antimuscarinic.
B. videourodynamics.
C. TUIP.
D. UroLift™.
E. TURP.
ANSWER=B

In some older patients, bladder outlet obstruction from BPH may be suspected and one may imm ediately proceed to outlet reduction surgery after failure of pharmacotherapy with an alpha-adrenergic blocker. This patient is young and has severe LUTS, and thus, should undergo more extensive workup prior to?any manner of surgical therapy. His flow rate is low and would be consistent w ith either obstruction or detrusor underactivity. Videourodynamics should discern this and other outflow related issues (i.e., dysfunctional voiding) and can also demonstrate the presence of primary bladder neck obstruction. An antimuscarinic would address storage, but not em ptying symptoms.

94. A 54-year-old man develops a firm erection during a laser prostatectomy under spinal anesthesia. The resectoscope is removed, but after 15 minutes, the erection persists. The next step is:

A. resume resection.
B. intracavernosal phenylephrine injection.
C. perineal urethrostomy.
D. convert to general anesthesia.
E. abort procedure.
ANSWER=B

Persistent penile erection may develop at any tim e during an endoscopic procedure and may drastically limit movement and m anipulation of the cystoscope. Time should be given for the detumescence to spontaneously occur w ithout any active treatm ent; however, if this does not happen, a pharmacologic agent such as phenylephrine should be administered to hasten detumescence. As this is a vasoactive substance, the anesthesiologist should be alerted to the im pending injection and monitor for systemic cardiovascular changes. If access is needed in a dire situation and vasoactive substances have failed, a perineal urethrostomy can be considered. However, unless it is an emergency, aborting the case may be preferable to a perineal urethrostomy. Continuing the case and resuming resection in the event of a persistent erection may lim it access to some portions of the prostate and may also damage the corpora. Conversion to general anesthesia has not been shown to elim inate persistent erection

95. A 51-year-old man with a 2.0 cm palpable right inguinal node undergoes resection of a 4.0 cm penile verrucous carcinoma. The next step is:

A. observation.
B. right inguinal lymph node biopsy.
C. right inguinal lymph node dissection.
D. bilateral inguinal lymph node dissection.
E. bilateral inguinal and pelvic lymph node dissection.
ANSWER=A

Verrucous carcinoma of the penis, also known as a Buschke-Lowenstein tumor, can be locally destructive due to compression of tissue which distinguishes it from condyloma acuminatum. However, unlike penile squamous cell carcinoma, verrucous carcinoma of the penis has a very low likelihood of metastasis. Therefore, the palpable adenopathy in this patient is very likely to be reactive and should be initially observed. Biopsy should be reserved unless the node remains persistently enlarged or grows over time. Lymphadenectomy in the context of verrucous carcinoma should be reserved for cases of biopsy-proven metastases.

96. A 54-year-old woman with hirsutism has Cushing syndrome. Her cortisol remains elevated after low-dose dexamethasone suppression. Both 17-ketosteroid levels and DHEA levels are significantly increased. The most likely diagnosis is:

A. functional adrenal adenoma,
B. ectopic ACTH production,
C. pituitary adenoma,
D. adrenocortical carcinoma,
E. anabolic steroid abuse.
ANSWER=D

This patient has elevated cortisol levels that are not affected by dexamethasone suppression, indicating an ACTH-independent cause of hypercortisolism. Potential etiologies include adrenocortical carcinoma (ACC) as well as ectopic ACTH production. The presence of increased ketosteroid levels and DHEA make ectopic ACTH less likely. Similarly, exogenous steroid use can cause virilization, including hirsutism, but should not elevate ketosteroid levels. Moreover, Cushing-associated virilization is more pronounced w ith ACC compared to functional adenomas, likely the result of co-secretion of 17-ketosteroids and DHEA, which are more characteristic of ACC than functional adenomas. Meanwhile, Cushing syndrome associated with pituitary adenoma should be ACTH-dependent and demonstrate cortisol suppression w ith low-dose dexamethasone.

97. A 55-year-old obese man undergoes radical cystoprostatectomy with Mainz pouch (cecum-terminal ileum neobladder). The pouch will not reach the urethral stump due to mesenteric tension. The next step is:

A. divide the ileocolic artery.
B. divide the right colic artery.
C. divide the middle colic artery.
D. convert to a continent cutaneous diversion.
E. create an ileal loop conduit.
ANSWER=B

Occasionally, surgeons will encounter difficulty approxim ating an orthotopic urinary diversion to the urethral stump in a patient with a particularly deep pelvis. When the pouch includes the right colon, the surgeon may obtain additional length on the mesentery by dividing the right colic artery. This artery, along with the ileocolic, middle colic, left colic, sigmoid artery, and the three hem orrhoidal arteries, make up the arc of Drummond and provide considerable leeway when m obilizing the

colon. The right colic artery often arises off the superior mesenteric artery, but can sometimes be seen arising directly from the middle colic or ileocolic artery. Division of the right colic artery can be performed safely and will often result in greater length on the mesentery of a neobladder that includes the cecum or right colon. Division of the ileocolic artery w ill result in ischemia and/or necrosis of the neobladder and division of the middle colic artery will not result in any additional length of the mesentery and may also compromise the bowel anastomosis. Alternate diversions should not be considered until all possible options have been exhausted.

98. Dietary calcium restriction will:
A. reduce urinary citrate.
B. increase urinary citrate.
C. reduce urinary oxalate.
D. increase urinary oxalate.
E. increase urinary pH.
ANSWER=D
There is substantial evidence dem onstrating that a low calcium diet in the absenceof other specific dietary measures is associated w ith an increased risk of stone form ation. In the case of calcium oxalate stone formers, a potential mechanism to explain this apparent paradox is that lower calcium intake results in insufficient calcium to bind dietary oxalate in the gut, thereby increasing oxalate absorption and urinary oxalate excretion. In contrast, a diet containing at least 1000 mg/day of calcium was shown to be associated with a reduced risk of stone form ation. Dietary calcium restriction w ill not typically affect urinary citrate or urine pH.

99. A 62-year-old man receives induction BCG for diffuse CIS of the bladder. At cystoscopy six months later, the optimal way to detect persistent or recurrent CIS is:
A. random bladder biopsies.
B. bladder wash cytology.
C. fluorescent in-situ hybridization (FISH).
D. blue-light fluorescent imaging.
E. narrow band imaging.
ANSWER=D
Using white light cystoscopy, urologists can suspect malignancy by the visual identification of erythematous bladder lesions or papillary tumors. However, as many as 37% of biopsies of suspicious findings performed on the basis of white light cystoscopy alone result in false-negative resuits, in addition, random biopsies of normal-appearing areas can occasionally detect malignancy which is usually CIS. This im perfect sensitivity of cystoscopy may in part explain the high risk of cancer recurrence soon after complete removal of all visible tumors. Since photoactive porphyrins accumulate preferentially in neoplastic tissue, blue-light fluorescent cystoscopy can help in the identification of indiscernible m alignant lesions. Using this technology, both small papillary tumors and almost 1/3 more cases of CIS overlooked on cystoscopy are identified. Compared to white light cystoscopy, hexam inolevulinate (HAL)-based blue-light imaging improved detection of both CIS (from 68 to 95%) and papillary tumors (from 85 to 96%). Although this has not been shown to decrease progression, the improved tum or detection with blue-light imaging appears to result in a decrease in recurrence rates. A systematic review demonstrated that non-muscle invasive bladder cancer recurrence was decreased during short-term (less than three months), interm ediate-term (three months to less than one year), and long-term (greater than or equal to one year) follow-up in patients who underw ent fluorescent cystoscopy w ith blue-light compared to white- light alone. Narrow band imaging (NBI) is an optical imaging enhancement technology and tended to improve the visibility of blood vessels inherent to neoplastic processes. However, in contrast to blue-light cystoscopy, no studies to date have been performed to investigate recurrence and/or progression after NBI cystoscopy. Bladder wash cytology, while relatively sensitive and specific for identification of CIS, has low sensitivity for the detection of lower-grade tumors. Fluorescent in-situ hybridization (FISH) has greater specificity and sensitivity for detection of CIS compared to cytology, but has not been shown to result in a decrease in recurrence.

100. A patient with recurrent calcium oxalate stones undergoes a 24-hour urine collection with the following results: calcium 150 mg (normal < 200 mg); oxalate 35 mg (normal < 40 mg); citrate 750 mg (normal > 550 mg); sodium 145 mg (normal < 150 mg); uric acid 925 mg (normal < 800 mg). The treatment most likely to reduce future stone formation is:
A. low oxalate diet.
B. low sodium diet.
C. allopurinol.
D. potassium citrate.
E. thiazide.
ANSWER=C
The AUA Medical Management of Kidney Stones Guideline states that clinicians should offer allopurinol to patients with recurrent calcium oxalate stones who have hyperuricosuria and normal urinary calcium. A prospective randomized controlled trial demonstrated that allopurinol reduced the risk of recurrent calcium oxalate stones in the setting of hyperuricosuria (urinary uric acid excretion > 800 mg/day) and normocalciuria. Whether the drug is effective in patients with hypercalciuria has not been established. Hyperuricemia is not a required criterion for allopurinol therapy. In addition to medication, specific recommendations about lim iting non- dairy animal protein may maximize the efficacy of allopurinol. In the present scenario, the patient's urine oxalate is normal, so a low oxalate diet would not be expected to have a large effect on urinary oxalate. A low sodium diet for calcium oxalate stone formers is most effective in the setting of hypercalciuria, which is not present. Potassium citrate is most effective in the setting of hypocitraturia; however, this is not present. A thiazide is most effective for hypercalciuria, which is not present.

101. A 35-year-old man has extensive intraurethral condyloma. The next step is:
A. cryoablation.
B. C02 laser ablation.
C. intraurethral 5-FU cream.
D. intraurethral imiquimod cream.
E. intraurethral podophyllin.
ANSWER=C

Urethral meatal warts can be treated with focal topical therapies such as podophyllin and im iquimod cream; however, neither are approved for internal use because of the potential for significant toxicity to normal tissue. Cryotherapy with liquid nitrogen can be applied topically to the urethral meatus but not within the more proximal urethra. The C02laser is absorbed by water so it cannot be used through a cystoscope. The treatm ent of intraurethral warts is either with intraurethral 5-FU cream or Holmium laser ablation. In patients w ith extensive intraurethral condyloma, 5-FU would be the initial treatm ent of choice.

102. The I.V. antibiotic prophylaxis recommended for radical cystectomy and ileal conduit in the AUA Best Practice Statement is:
A. first generation cephalosporin 30 minutes prior to incision and continued for 24 hours.
B. second generation cephalosporin 30 minutes prior to incision and continued for 48 hours.
C. third generation cephalosporin 30 minutes prior to incision and discontinuation within 24 hours.
D. ampicillin, gentamicin, and metronidazole 30 minutes prior to incision.
E. gentamicin and metronidazole 30 minutes prior to incision and continued for 48 hours.
ANSWER=C
The optimal strategy for perioperative antibiotic prophylaxis has undergone significant change over the past 20 years. Currently, the role of mechanical bowel preparation prior to the use of intestinal segments is controversial. Also, the use of oral antibiotics prior to the use of intestinal segments is controversial. The AUA Best Practice Policy Statement on antibiotic prophylaxis states that an intravenous second or third-generation cephalosporin within one hour prior to the incision and discontinued within 24 hours is the optimal strategy. Long courses of I.V. antibiotics are associated with an increased risk of bacterial resistance and secondary infections (C. difficile or fungal infections). Acceptable alternatives include an aminoglycoside and m etronidazole w ithin one hour prior to the incision and discontinued w ithin 24 hours.

103. A 38-year-old man has a fungating mass of the distal penis. Physical examination is otherwise normal, and metastatic evaluation is negative. Partial penectomy reveals a 5 cm poorly-differentiated squamous cell carcinoma arising from the urethra with invasion of both corpora cavernosum. Surgical margins are negative. The next step is:
A. observation.
B. bilateral superficial inguinal node dissection.
C. chemoradiation.
D. adjuvant radiotherapy.
E. chemotherapy.
ANSWER=A
Unlike patients with penile cancer, a survival benefit has not been demonstrated w ith prophylactic inguinal lymph node dissection for patients with urethral cancer and no palpable or radiographic evidence of lymph node involvement. Since this patient is w ithout evidence of adenopathy, observation rather than a superficial inguinal node dissection is recommended. Of note, for patients w ith limited inguinal nodal disease and w ithout distant metastases, cases of curative resection with inguinal lymph node dissection have been reported. Therefore, inguinal lymphadenectomy should be considered in the presence of palpable inguinal lymph nodes in a patient w ithout distant metastases. Chemoradiation may be used for patients with anterior urethral carcinoma as an effort for genital preservation, while m ultim odal therapy, including radiation and chemotherapy w ith surgery, is often recommended for advanced urethral tumors particularly of the proximal urethra. However, in the setting such as this patient who has a resected pendulous urethral squamous cell carcinoma w ithout evidence of adenopathy or distant metastases, the use of additional postoperative treatm ent with chemotherapy, radiation, or chemoradiation does not have evidence to support an improvem ent in survival.

104. A 34-year-old man has premature ejaculation and new onset erectile dysfunction. A penile duplex Doppler ultrasound demonstrates a peak systolic velocity of 38 mL/sec and an end diastolic velocity of 2 mL/sec. The next step is:
A. topicallidocaine spray.
B. paroxetine.
C. tadalafil.
D. intracavernosal injection therapy.
E. penile prosthesis.
ANSWER=C
Patients with erectile dysfunction (ED) and premature ejaculation should have their ED addressed first. Thus, selective serotonin reuptake inhibitors (SSRIs) and topical lidocaine would not be the first choice for therapy. Diagnosis of vasculogenic ED may be aided by penile duplex Doppler ultrasound blood flow measurements, and cavernous arterial insufficiency is suggested when peak systolic velocity (PSV) is less than 25 cm/s. Conversely, a PSV consistently greater than 35 cm/s defines normal cavernous arterial inflow. Cavernous veno-occlusive dysfunction, which refers to failure of erection maintenance despite adequate cavernous arterial inflow (i.e., failure to store), is typically present when persistent high systolic flow velocities (i.e., PSV > 25 cm/s) are combined with high end-diastolic flow velocities (EDV > 5 cm/s). According to the Doppler ultrasound results for this patient (normal hemodynamics), the ED is likely psychogenic in nature. A phosphodiesterase type 5 inhibitor is the least invasive and an appropriate therapy for ED. In addition, there is a possibility that premature ejaculation may resolve with successful treatm ent of ED, which is why the ED should be treated first.

105. The prostatic enzyme that is also found in the small intestine and salivary glands is:
A. prostate cancer antigen 3 (PCA3).
B. prostate specific membrane antigen (PSMA).
C. prostate stem cell antigen (PSCA).
D. prostatic acid phosphatase.
E. prostate specific protein.
ANSWER=B
Prostate cancer antigen 3 (PCA3) may be measured in the urine and is made up of non-coding messenger RNA. The test is currently approved as a biom arker for a persistently elevated PSA after a negative biopsy. The level of PCA3 has been associated with tum or volume and grade at radical prostatectomy. Prostate-specific membrane antigen (PSMA) is a

ubiquitous molecule that has many potential mechanisms in prostate epithelial cel! metabolism and may be involved in the developm ent and spread of prostate cancer. Of the mentioned prostatic enzymes, it is the only one found in small bowel and is im portant in nutrient uptake for both benign and m alignant prostate epithelial cells. Currently, PSMA is used during molecular imaging to stage prostate cancer and has greater sensitivity than conventional imaging modalities, such as bone scan or MRI. Additionally, it is used for the delivery of targeted therapeutics. Prostate stem cell antigen (PSCA) is a cellsurface antigen that is expressed by both prostate and bladder tissue. There is a potential use of PSCA for prostate targeted imaging or therapeutics. Prostatic acid phosphatase levels are more than 200 times higher in the prostate compared to other tissues. Currently, there are no clinical applications for prostatic acid phosphatase. Prostate-specific protein is one of three predom inant proteins found in the seminal fluid, with PSA and prostatic acid phosphatase being the others. Its main biological function is to inhibit FSH. Currently, there are no clinical applications involving prostate-specific protein.

106. A 52-year-old man with bladder cancer desires orthotopic diversion after cystectomy. His serum creatinine is 2.1 mg/dL, creatinine clearance is 40 mL/min, urine pH is 5.8 after an ammonium load, and his urine osmolality is 600 mOsm/kg after water deprivation. The next step is:

A. ileal conduit.
B. sigmoid colon conduit.
C. transverse colon conduit.
D. ileal orthotopic neobladder.
E. ileocolonic continent cutaneous pouch.
ANSWERED

For patients who have a serum creatinine less than or equal to 2.0 mg/dL, a more detailed investigation of their renal function is necessary prior to considering any form of retentive diversion. In such patients, orthotopic diversion can be safely offered provided the creatinine clearance is > 35 mL/min, they can achieve a urine pH of = 5.8 w ith an ammonium challenge, and they can increase urine osmolality to 600 mOsm/kg in response to fluid restriction. It is not necessary, therefore, to insist on a non-continent conduit diversion and no advantage to plan on continent cutaneous diversion over orthotopic diversion given the patient's preference.

107. On postoperative day one, following a three-hour ureteroscopy performed under spinal anesthesia, a 47-year-old man is ambulating normally but complains of lower back pain radiating down both legs. The most likely diagnosis is:

A. cerebrospinal fluid leak.
B. epidural hematoma.
C. rhabdomyolysis.
D. compartment syndrome.
E. positional neuropathy.
ANSWER=E

Lower extrem ity neuropathy can occur follow ing a procedure perform ed in the lithotom y position. Such neuropathies are characterized by paresthesia as well as pain. They will generally resolve w ith conservative management. Cerebrospinal fluid leak is characterized by headache. Epidural hematoma w ill be associated with radicular pain and is rare. While rhabdomyolysis and com partm ent syndrome couldbe associated with prolonged surgery and pain, there would be no radiation to the legs as seen in this patient which suggests a neurologic etiology.

108. The primary demonstrated benefit of vaccinating boys aged 10-12 years with the human papillomavirus 9-valent vaccine (Gardasil 9™) is a reduction of:

A. HIV co-infection.
B. genital warts.
C. penile cancer.
D. oropharyngeal cancer.
E. cervical cancer.
ANSWER=B

There is continued discussion and controversy regarding the vaccination of boys prior to becoming sexually active, and the routine practice of this is relatively low in the United States. Studies would suggest that early vaccination is effective and prevents HPV infection and the developm ent of HPV-associated genital warts as well as anal cancers. There is no effect on co-infection with HIV. It is thought, but not proven, that the herd im m unity with widespread vaccination of boys will lead to reductions in penile cancer, oropharyngeal cancer, and cervical cancer in women.

109. The medication with the greatest risk of polycythemia is:

A. oral anastrozole.
B. oral clomiphene citrate.
C. subcutaneous FSH.
D. subcutaneous human chorionic gonadotropin.
E. intramuscular testosterone cypionate.
ANSWER=E

Polycythemia, also known as erythrocytosis, is defined as a hem atocrit > 52%. This condition can be either congenital or acquired. Acquired (secondary) polycythemia can be caused by hypoxia (tobacco use, obstructive sleep apnea, chronic obstructive pulmonary disease), living at a high altitude, paraneoplastic syndrome, polycythemia vera, and testosterone replacement therapy. After the initiation of testosterone replacement therapy, levels of hem oglobin and hem atocrit tend to rise for the first six months of therapy, and then plateau. The risk of polycythemia is greatest with the intramuscular form ulation (19%), follow ed by testosterone pellets (12.5%) and gels (5.4%). Anastrozole, clomiphene citrate, and human chorionic gonadotropin all commonly result in increased serum testosterone levels, but their associated risk of polycythemia is much lower than that of exogenous testosterone. FSH adm inistration does not affect serum testosterone levels and does not cause polycythemia.

110. Compared to partial nephrectomy, percutaneous cryoablation of a 2.8 cm peripheral posterior RCC is associated with:

A. improved nephron preservation.
B. fewer urinary fistulas.
C. increased risk of arteriovenous malformation.
D. higher local recurrence.
E. better cancer-specific survival.

ANSWER=D

Both partial nephrectomy and thermal ablation are reasonable treatm ent modalities for a renal mass <3 cm. Thus, in this case, the size and location would likely make both options available. There is likely no significant difference between the two techniques w ith respect to renal preservation, perioperative complications (urinary fistulas or arteriovenous m alform ation), and cancer-specific survival. However, the accumulated evidence suggests that ablation is associated with a greater risk of local recurrence, although this can often be adequately managed with additional treatm ent (either re-ablation or surgical resection).

111. A Tanner stage 2, 12-year-old boy has a grade 3 left varicocele that is present in both supine and standing position. The left testis is 8.5 mL and the right is 10.5 mL. The next step is:

A. follow-up in six months,
B. scrotal ultrasound,
C. abdominal ultrasound,
D. semen analysis,
E. varicocelectomy.

ANSWER=C

The identification of a grade 3 varicocele is not an uncommon occurrence; however, the dilation of the pam piniform plexus should resolve when the patient is in the supine position. Failure to do so raises the suspicion for compression of the renal vein w ith a mass and upper tract imaging is indicated. A scrotal ultrasound would not identify a retroperitoneal mass. Semen analysis is not indicated in pre-pubertal varicocele evaluation. If the varicocele were to resolve in the supine position, then follow -up in six months would be appropriate. Treatment of the condition is not warranted in the absence of a 20% size discrepancy on serial examinations. Thetesticular volume is appropriate given Tanner stage and neither testis demonstrate hypotrophy.

112. A ten-year-old girl with spina bifida and her father are considering surgical management of her urinary incontinence. The process of discussing the risks and benefits of surgery with the patient and confirming the desire to proceed with surgery is known as:

A. assent.
B. consent.
C. paternalism.
D. non-maleficence.
E. statutory minor principle.

ANSWER=A

School-aged children and adolescents should be provided with age-appropriate inform ation on diagnostic and therapeutic interventions and give their assent to the recommended intervention before proceeding. Conversely, they should be able to give dissent if they do not agree to proceed. Consent must be obtained from the parent(s) or legal guardian since the patient is a minor. Shared decision making is a term that applies to providing patients (and their families) with various diagnostic and therapeutic options and together choosing a course of action when there is no clear superior intervention or guideline. Statutory minors are legally designated to make health care decisions without parental involvement, typically in issues related to reproductive health, mental health, or substance abuse. Paternalism is an ethical principle in which the concept of im pairm ent (that others are not capable of making a sound choice) is used by the decision-maker. Non-maleficence is an ethical principle referring to the obligation to avoid or minimize harm to the patient.

113. After surgical resection of adrenocortical carcinoma, the most important factor associated with overall survival is:

A. hormonal activity.
B. tumor size.
C. T (tumor) stage.
D. R (margin) status.
E. adjuvant chemotherapy.

ANSWERED

In m ulti-variable analysis of patients undergoing surgical resection of adrenocortical carcinoma, the factor most associated with overall survival is achieving negative surgical margins. Other variables in prognostic models include tumor size and nodal status. In predicting recurrence-free survival, the model included tumor size, nodal status, T stage, functional activity, and capsular invasion. Of note, while retrospective data have indicated a benefit to adjuvant m itotane after surgical resection, its use remains controversial given the potential risks and uncertain benefits of treatm ent.

114. For optimal maintenance of ejaculation during a right-sided nerve-sparing RPLND, the surgeon should preserve:

A. preganglionic sympathetic fibers anterior to the vena cava.
B. postganglionic sympathetic fibers anterior to the vena cava.
C. preganglionic parasympathetic fibers posterior to the vena cava.
D. postganglionic sympathetic fibers posterior to the vena cava.
E. postganglionic parasympathetic fibers anterior to the vena cava.

ANSWER=D

To optim ally preserve antegrade ejaculation, the sympathetic chain, postganglionic efferent sympathetic fibers, and hypogastric plexus should be saved. On the right side, these nerves arise from the sympathetic trunk that lies on the anterior lateral surface of the spine, posterior to the inferior vena cava. There are normally three to four nerve trunks that travel behind the inferior vena cava and anastomose to form the superior hypogastric plexus around and below the inferior mesenteric artery on the anterior surface of the aorta. On the left side, the postganglionic fibers similarly arise from the sympathetic trunk on the anterolateral aspect of the spine and travel lateral and anterior to the aorta and anastomose to join the superior hypogastric plexus.

115. Cardiac arrhythmias associated with SWL:

A. are more common with gated SWL.
B. occur more often in patients with history of coronary artery stenting.
C. resolve with cessation of SWL.
D. occur in less than 5% of patients.
E. are often related to the strength and number of shockwaves.

ANSWER=C

Arrhythm ia is precipitated by SWL in some patients, thereby resolving with cessation of shocks. They occur more often in patients undergoing ungated procedures, and if they persist, may require conversion to gating (shock delivery synchronized to patient electrocardiogram R-wave) during the procedure. The reported rate of arrhythm ia is approxim ately

8-21%. There has been no definitive correlation of an arrhythm ia w ith the age or gender of the patient, presence of heart disease, size or location of the stone, presence of ureteral catheter or nephrostomy tube, number or strength of the shockwaves, or the anesthetic agent delivered.

116. A 35-year-old man who underwent ileocystoplasty twenty years ago has numbness in the hands and feet, loss of balance, and postural hypotension. Serum testing will most likely show elevated:
A. bicarbonate.
B. calcium.
C. creatinine.
D. homocysteine.
E. potassium.
ANSWER=D
The use of a significant section of distal ileum in urinary tract reconstruction may result in Vitamin B12 malabsorption and subsequent anemia and neurologicabnormalities. Low serum levels of Vitamin B12 have been described in up to 21% of children who have undergone ileocystoplasty, but clinical effects may not manifest for many years, since the liver stores enough Vitamin B12 to supply the body's requirem ent for three to five years w ithout oral intake. Moreover, low serum levels of Vitamin B12 do not always correlate with metabolic deficiency. Since Vitamin B12 serves as a coenzyme in the metabolic pathways of homocysteine and m ethylm alonic acid, elevated levels of homocysteine serve as a sensitive indicator of whether the low Vitamin B12 level is significant. If electrolyte abnormalities are seen with ileal reconstruction, they present as a syndrome of hyperchloremia, metabolic acidosis, total-body potassium depletion, and hypocalcemia. Symptoms include fatigue, anorexia, lethargy, and weakness. Creatinine is not necessarily elevated.

117. A 25-year-old woman with cerebral palsy has an 8 mm mid-ureteral calculus. Preoperative urine culture grew 100,000 CFU/mL pansensitive E. coli. She is asymptomatic and was treated with trimethoprim/sulfamethoxazole for five days prior to ureteroscopy. Upon passage of a guidewire, turbid urine drains from the ureteral orifice. The next step is:
A. proceed with ureteroscopy.
B. administer I.V. gentamicin and proceed with ureteroscopy.
C. remove wire and abort.
D. place ureteral stent and abort.
E. place percutaneous nephrostomy tube.
ANSWER=D
Stone procedures should be aborted if purulent urine is encountered during endoscopic intervention. Appropriate drainage should be established, a urine culture should be obtained and antibiotic therapy should be continued. In this case where a wire could be advanced and the patient is asymptomatic, a ureteral stent would offer adequate drainage. A nephrostomy tube is not indicated at this time unless a stent cannot be easily advanced. Removal of the wire and term ination of the procedure would not drain the possibly infected upper urinary tract. Proceeding w ith intervention in the setting of a possible infection above the stone is discouraged and w ill increase the risk of postoperative sepsis.

118. An asymptomatic two-year-old girl with resolved prenatal hydronephrosis is noted on pelvic ultrasound to have a 1 cm urachal remnant. The next step is:
A. observation.
B. VCUG.
C. antibiotics.
D. excision of urachal remnant.
E. excision of entire urachus.
ANSWER=A
There is no evidence to support the position that a persistent urachal remnant in childhood increases the risk of cancer. Therefore, partial or complete removal is not recommended and small asymptomatic urachal remnant excision is not indicated as these children can be observed. A VCUG is invasive and unnecessary for an asymptomatic remnant detected by ultrasound. Antibiotics may be useful in patients that present with an infected urachal cyst, but are not indicated in this child.

119. The factor associated with the greatest risk of lethal prostate cancer is:
A. African-American ethnicity.
B. family history of prostate cancer.
C. BRCA1 mutation.
D. BRCA2 mutation.
E. MSH2 mutation.
ANSWER=D
All of these factors likely increase the risk of developm ent of prostate cancer in men. Ethnicity and fam ily history are im portant factors to consider when screening men for prostate cancer. In addition, it is recognized that men with BRCA m utations as well as hereditary non-polyposis colorectal cancer (HNPCC) also known as Lynch syndrome, which includes MSH2 mutations, are also at an increased lifetim e risk for prostate cancer and may deserve more intense cancer screening. However, amongst these, BRCA2 is most associated with early-onset and more aggressive disease, as well as significantly higher cancer-specific m ortality. African-American men, those w ith a family history of prostate cancer, and germ line BRCA1 mutations, all increase the risk of prostate cancer and may increase the likelihood of lethal prostate cancer, but not to the m agnitude of a BRCA2 m utation.

120. Hypertension is a common side effect of:
A. cabazitaxel.
B. denosumab.
C. sipuleucel-T.
D. enzalutamide.
E. abiraterone.
ANSWER=E
Abiraterone is administered orally and selectively inhibits the cytochrome p450 isoform 17(CYP17). This also blocks 17-alpha-hydroxylase and 17,20-lyase activity, leading to secondarily increased production of mineralocorticoids. This manifests as hypertension, hypokalemia, and pedal edema which is attenuated with the addition of prednisone. Cabazitaxel was FDA-approved for the treatm ent of metastatic, castrate-resistant prostate cancer in 2010, and its mechanism of action is microtubule inhibition and inhibiting cell division. Side effects include

hair loss, nausea, abdominal pain, blood in the urine, and stool and weakness due to anemia. Common side effects of denosumab and enzalutamide include fatigue and nausea, respectively. Sipuleucel-T is FDA-approved for metastatic castrate-resistant prostate cancer with no or few symptoms. Common side effects include chills, fatigue, fever, back pain, nausea, joint ache, and headache.

121. A 70-year-old man is diagnosed with metastatic prostate cancer to bone. His bone mineral density is normal. In addition to an LH-RH antagonist, he should receive:

A. bicalutamide.
B. bicalutamide + denosumab.
C. abiraterone.
D. abiraterone + prednisone.
E. abiraterone + prednisone + zoledronic acid.

ANSWER=D

The initial treatm ent of metastatic prostate cancer has undergone significant changes since 2015. In that year, two trials, Chemotherapy in Treating Patients with Metastatic Prostate Cancer (CHAARTED) and Systemic Therapy in Advancing or Metastatic Prostate Cancer: Evaluation of Drug Efficacy (STAMPEDE) showed androgen deprivation therapy combined w ith six courses of docetaxel improved survival. In 2017, a further report from the STAMPEDE investigators demonstrated abiraterone + prednisone added to androgen deprivation therapy improved overall and failure-free survival, establishing this treatm ent as a new standard of care. Abiraterone should be used in com bination with prednisone to prevent secondary hypertension and hypokalemia due to the accumulation of mineralocorticoids resulting from CYP17 blockade. Bone targeting agents such as the bisphosphonate zoledronic acid and the RANK ligand inhibitor denosumab are approved for use in patients with castrate-resistant prostate cancer and skeletal metastases to prevent adverse skeletal events such as fractures and spinal cord compression. These agents have not been demonstrated to prevent adverse skeletal events in patients with hormone-sensitive prostate cancer. Although denosumab and zoledronic acid can be used to prevent osteoporosis associated with androgen deprivation therapy, they are not currently indicated in this man with a normal bone mineral density. Bicalutamide is an antiandrogen whose addition to LH-RH antagonists does not substantially improve prognosis as compared to the addition of abiraterone or docetaxel.

122. A 35-year-old woman with intermittent flank pain has ipsilateral moderate hydronephrosis on CT urogram and a normal diuretic MAG-3 renal scan. She undergoes a Whitaker test (perfusion pressure-flow study) with a renal pelvis/bladder differential pressure of 10 cm H20. The next step is:

A. observation.
B. repeat Whitaker test with diuretic administration.
C. diagnostic ureteroscopy.
D. endopyelotomy.
E. pyeloplasty.

ANSWER=A

The renal pelvis/bladder differential pressure cutoffs during a W hitaker test are: normal < 14 cm of H20; mild obstruction 14-20 cm H20; moderate obstruction 21-34 cm H20; and severe obstruction > 35 cm H20. This patient's W hitaker test is normal and observation or evaluation for other sources of non-urologic pain is appropriate. A diuretic is not used w ith a W hitaker test. Further evaluation with diagnostic ureteroscopy or surgical intervention with endopyelotom y or pyeloplasty is not indicated based on the normal W hitaker test results.

123. A 13-year-old girl has a 2.5 cm stone in the left mid-pole of a horseshoe kidney. Anatomical consideration(s) for surgical treatment is/are:

A. ureters usually insert in a caudal, ectopic location in the bladder.
B. renal pelvises are positioned posteriorly.
C. calyces are fewer than normal.
D. calyces point posteriorly.
E. isthmus is located adjacent to S2-S4.

ANSWER=D

In a horseshoe kidney, calyces are normal in number and point posteriorly as the kidney fails to rotate. This consideration is relevant as this anatomical feature guides the technique of percutaneous access. The ureter usually inserts in a normal position on the bladder. Renal pelvises are also anteriorly placed, not posterior due to failure of rotation. The isthmus is inferiorly placed, just below the inferior mesenteric artery, adjacent to L3 or L4.

124. A 59-year-old man who had an uncomplicated vasectomy 12 years ago is trying to conceive with his 39-year-old wife. Neither have achieved a prior pregnancy. His scrotal examination is normal. Sperm retrieval with IVF/ICSI is preferred in this setting due to:

A. advanced paternal age.
B. advanced maternal age.
C. absence of sperm granulomas,
D. lack of prior conception by father,
E. lack of prior conception by mother.

ANSWER=B

The AUA Best Practice Statement on Male In fertility states that sperm retrieval with IVF/ICSI is preferred to surgical reconstruction of the vas deferens after vasectomy when "(1) advanced female age is present, (2) female factors requiring IVF are present, (3) the chance for success with sperm retrieval/ICSI exceeds the chance for success with surgical treatm ent, or (4) sperm retrievaI/ICSI is preferred by the couple for financial reasons." Female reproductive potential decreases with advancing age, with more steep declines seen after age 35. The element of time is further compounded by the fact that the average tim e to pregnancy after vasectomy reversal is 12 months. For these reasons, the statement notes that couples "may consider sperm retrieval with ICSI when the female partner is greater than 37 years of age." The document also cautions that in couples with female partner age approaching 40, the success rate of IVF with or w ithout ICSI decreases dramatically as well. Advanced paternal age and lack of prior conception by either parent are not independent indications for sperm retrieval and IVF/ICSI over vasectomy reversal. Sperm granulomas are not predictive of success rates with vasectomy reversal and are not criteria to consider when deciding between sperm extraction with IVF/ICSI or vasectomy reversal.

125. A 35-year-old man with secondary infertility has decreased libido and energy. Two semen analyses reveal normal ejaculate volume azoospermia. LH is 0.2 mlU/mL, FSH is 0.3 mlU/mL, testosterone is 40 ng/dL, and prolactin is 10 ng/dL (normal < 20 ng/dL). The next step is:

A. clomiphene citrate.
B. FSH.
C. human chorionic gonadotropin.
D. TRUS.
E. MRI scan of brain.
ANSWER=D

This patient has secondary hypogonadotropic hypogonadism and a normal serum prolactin level. The AUA Best Practice Statement regarding The Evaluation of the Azoospermic Male as well as the AUA Guideline on the Evaluation and Management of Testosterone Deficiency state that such patients should be evaluated forfunctioning and non-functioning pituitary tumors by imaging of the pituitary gland. Clomiphene citrate blocks estradiol negative feedback at the level of the hypothalamus and pituitary gland and w ill likely not be effective in the setting of a structural pituitary defect. FSH and human chorionic gonadotropin (LH agonist) are options for treating hypogonadal men with gonadotropin deficiency, but they are not the next step in this case. TRUS is not indicated in this case as the patient has normal ejaculate volume; therefore, ejaculatory duct obstruction is not suspected.

126. A 30-year-old man with a maximum urinary flow rate of 12 mL/sec undergoes meatotomy for meatal stenosis. After opening the urethra to the coronal margin, the lumen is still narrow at 12 Fr. The next step is:

A. retrograde urethrogram.
B. urethral biopsy.
C. suprapubic cystostomy.
D. self-dilation with steroid ointment.
E. continue the urethrotomy proximally until normal urethral lumen.
ANSWER=A

This patient has a more extensive stricture than simply meatal stenosis. Once it is clear that the wrong diagnosis has been made, one should not continue to extend the urethrotom y. It is possible that the stricture extends throughout the entire urethra and he could be left with a disfiguring surgery that he did not consent to. More inform ation is necessary before proceeding with additional therapy. Even dilation is not appropriate until the full length of the stricture is known. A retrograde urethrogram is the most appropriate next step. Urethral biopsy is not necessary for first-tim e strictures. He was not consented for suprapubic cystostomy, and it is not necessary at this time because his stream is only moderately slow and he is not in retention. There is no evidence that steroid ointm ent improves outcomes of urethral dilation.

127. A 35-year-old woman has passed two calcium oxalate stones in the past ten years. No renal calcifications are visible on a KUB. She would like to become pregnant. Her risk of stone formation during her pregnancy will be:

A. decreased.
B. unchanged.
C. increased in the first trimester,
D. increased in the second trimester,
E. increased in the third trimester.
ANSWER=B

Im portant physiologic changes occur to the kidney during pregnancy. These include increases in renal blood flow which will increase the filtered loads of calcium, sodium, and uric acid. Hypercalciuria is further increased by placental production of 1,25(OH) Vitamin D3, which w ill increase calcium absorption by the intestine and suppress PTH. Simultaneously, pregnant women increase the excretion of stone inhibitors such as citrate, magnesium, and uric acid. Therefore, her overall risk of stone form ation during pregnancy is unchanged

128. Four years after radical prostatectomy for Gleason 8 (4+4) pT3bN1 adenocarcinoma, an asymptomatic 78-year-old man on leuprolide has a PSA increase from undetectable to 2.1 ng/mL, and then 3.4 ng/mL eight weeks later. Testosterone is 20 ng/dL, and metastatic evaluation is negative. The next step is:

A. apalutamide.
B. bicalutamide.
C. denosumab.
D. sipuleucel-T.
E. docetaxel.
ANSWER=A

This patient has non-metastatic castration-resistant prostate cancer (CRPC), defined by a confirmed rise in PSA, castrate levels of testosterone, and no radiographic evidence of metastatic disease. Standard treatm ent for such a patient at high-risk for developing metastatic disease per AUA Guidelines is to offer apalutamide or enzalutamide (or darolutam ide, which is likely to be approved in 2019-2020). Apalutam ide is a non-steroidal anti-androgen that binds directly to the ligand-binding domain of the androgen receptor (AR) and inhibits AR nuclear translocation, DNA binding, and transcription. The efficacy of apalutam ide among patients with non-metastatic CRPC was demonstrated in the Phase 3 SPARTAN trial, in which the median metastases-free survival was 40.5 months with apalutam ide versus 16.2 months in the placebo group (HR 0.28; 95% Cl 0.23-0.35; p0.001). As a result, the agent has been FDA approved for use in this setting. Although first-generation anti-androgens, such as bicalutamide, have historically been used in this setting, potential benefits appear modest, and no randomized trials have compared these agents to observation in order to demonstrate a meaningful clinical benefit. In the absence of definitive evidence regarding efficacy for bicalutamide, and given that treatm ent may entail side effects, apalutam ide would represent a better option. Importantly, the AUA Guidelines specifically recommend against systemic chemotherapy (i.e., docetaxel) or im m unotherapy (i.e., sipuleucel-T) for patients with non-metastatic CRPC outside of the context of a clinical trial due to the concern regarding the risk of serious adverse events w ithout high-quality evidence supporting efficacy. Further, although denosumab has been shown in a prospective randomized trial to increase bone-metastases-free survival versus placebo (by 4.2 months) for patients with non- metastatic CRPC, no significant im provem ent in overall survival was noted, and the agent has not received FDA approval in this setting

129. A 14-year-old asymptomatic girl with multiple, non-obstructing, 3-4 mm renal calculi has a serum creatinine 0.5 mg/dL, Na 140 mEq/L, K 3.8 mEq/L, Cl 124 mEq/L, HC03 24 mEq/L, P04 3.2 mg/dL, Ca 10.8 mg/dL, and urine pH 6.0 (normal 5.8-6.2). The next step is:

A. parathyroid hormone level.
B. uric acid level.
C. 24-hour urine study.
D. increase fluid intake.
E. ureteroscopy with stone removal.

ANSWER=A

This patient has m ultiple calculi and a high normal serum calcium in a limited stone evaluation. These stones may represent the first sign of hyperparathyroidism. Given these findings, a serum PTH level is indicated. The likelihood of having hyperuricemia is quite low given her state of health (no gout, no malignancy), age, and urine pH; therefore, serum uric acid levels may not be helpful. A 24-hour urine study would be useful to evaluate for hypercalciuria and may help confirm the diagnosis. Increasing fluid intake is good advice for any stone former and should be considered, but a 24- hour urine study and increased fluids are not the initial steps. While her other calculi may require therapy, the current goal is to prevent future stone form ation.

130. During robotic-assisted surgery, the bipolar grasper instrument stops working completely and is locked in place while grasping tissue. Conventional attempts at instrument removal are unsuccessful. The next step is:

A. power the system on and off.
B. push emergency stop and use tool wrench.
C. disable patient cart arm by pressing and holding the "home" button.
D. resect the tissue being held by the robotic grasper to facilitate disengagement.
E. convert to open surgery to safely dislodge the robotic instrument.

ANSWER=B

If the robotic instrument becomes stuck and unresponsive, the robot must be placed in fault state by pressing the emergency stop button. The sterile tool wrench is then inserted into the hole on the robotic instrument's emergency grip release socket. The wrench is turned counter-clockwise one-quarter turn to open the bipolar grasper jaw. This releases the tissue from the jaw. The robotic grasper may then be removed. The emergency release wrench should be re-sterilized and placed in an accessible location. The other maneuvers do not result in instrument release. Dissecting tissue to facilitate disengagement is premature at this point and may not allow instrument release. Moreover, conversion to open surgery should not be considered before attem pts with the emergency release tool wrench.

131. In patients with previously untreated metastatic clear cell RCC, the complete response rate of combination nivolumab and ipilimumab is approximately:

A. 1%.
B. 10%
C. 20%
D. 33%
E. 50%

ANSWER=B

The Checkmate-214 trial compared the com bination of nivolumab and ipilim um ab versus sunitinib in the front-line treatm ent of patients with metastatic clear cell RCC.Over 75% of patients were either interm ediate or poor-risk in these groups. The nivolum ab/ipilimum ab arm had a significantly greater overall response (42%) compared w ith sunitinib (27%). The median duration of response was not reached in the im munotherapy arm and was 18.2 months for sunitinib. Interestingly, the complete response rate was 9% in the nivolum ab/ipilim um ab group, similar to that for high-dose IL-2 (5-10%) but only 1% for sunitinib, consistent with prior observations for TKI and mTOR inhibitors. FDA approval for this indication was given in 2018.

132. A 17-year-old boy has a neurogenic bladder secondary to a T10 spinal cord injury with new-onset hydroureteronephrosis and VUR. He refuses CIC. The safest, long-term alternative to CIC is:

A. alpha-adrenergic blockers.
B. condom catheter.
C. chronic indwelling urethral catheter.
D. sphincterotomy.
E. intradetrusor onabotulinumtoxinA.

ANSWER=D

This patient most likely has detrusor sphincter dyssynergia (DSD) and is demonstrating complications of DSD w ith new onset VUR. Therapy for DSD is to minimize sphincteric activity or to bypass/overcome the sphincter. CIC, in com bination w ith antimuscarinics, is the most commonly used therapy for patients with DSD. In this patient who refuses CIC, other choices include sphincterotomy, stent placement across the sphincter (uncommonly used due to complications), injection of onabotulinum toxinA into the sphincter, and continuous indwelling catheterization. Urinary diversion is an option, but it may be useful to allow this adolescent to mature prior to embarking on an extensive surgery. Continuous indw elling catheter drainage may be a good short-term solution until the patient becomes more involved in their care. Smooth muscle relaxation is produced by blocking alpha-1-adrenoceptors in the bladder neck and prostate, but they do not affect the striated sphincter. Intradetrusor onabotulinum toxinA will decrease bladder pressure but will not facilitate bladder em ptying. Similarly, a condom catheter w ill only collect urine overflow.

133. A 27-year-old man with a C4 complete spinal cord injury develops struvite stones five years after his injury. He is managed with a 14 Fr indwelling urethral catheter. The next step is definitive stone treatment and:

A. daily suppressive antibiotics.
B. CIC.
C. upsize urethral catheter.
D. suprapubic tube.
E. sphincterotomy and condom catheter.

ANSWER=E

Renal stone rates are seven to eight times higher in spinal cord injury (SCI) patients than in the general population. UTIs and chronic bacteriuria (especially w ith urea- splitting organisms) are significant risk factors for stone form ation in this population. As such, reducing bacteriuria will minim ize the risk of struvite stone form ation. Dailysuppressive

antibiotics are not enough, and elim inating any potential nidus for infection is necessary. This patient cannot perform CIC on his own and any indwelling urinary catheter, whether it is a larger urethral catheter or a suprapubic tube, will be associated w ith colonization and bacteriuria. Of the options given, sphincterotom y with condom catheter drainage is his best chance of m inim izing chronic bacteriuria; however, long-term outcomes w ith sphincterotomy are sub- optim al, w ith the potential for continued issues with incomplete em ptying. Although ileal conduit urinary diversion would allow the best long-term solution, most patients initially opt for sphincterotomy as a less-invasive option.

134. Two weeks after a Caesarean section, a 29-year-old woman has constant drainage from the vagina. Cystoscopy is unremarkable and retrograde ureteropyelography reveals a ureterovaginal fistula 6 cm from the bladder. Retrograde stent placement is unsuccessful. The next step is:

A. observation.
B. antegrade stent placement,
C. ureteroureterostomy,
D. ureteroneocyst ostomy.
E. Boari flap.

ANSWER=B

The goal of therapy for a ureterovaginal fistula is the expeditious resolution of urinary leakage, avoidance of urosepsis, and preservation of renal function. Once the diagnosis is made, prompt drainage of the affected upper urinary tract is essential. Observation in this setting is highly unlikely to result in resolution of the symptoms. In general, if ureteral continuity can be demonstrated on imaging, retrograde placement of a stent is often possible and should be attem pted first. In some cases, an antegrade stent placement will be successful where a retrograde attempt had failed. If ureteral stenting is unsuccessful owing to complete ureteral occlusion or if prolonged leakage persists despite stenting, then a tem porizing nephrostomy tube should be placed while aw aiting formal surgical repair. Surgical repair would not be recommended at this time. When repair is performed, this patient would likely benefit from ureteroneocystostomy with possible psoas hitch. A Boari flap will usually not be needed for an injury 6 cm above the bladder.

135. According to the 2016 Centers for Disease Control Guideline for Prescribing Opioids for Chronic Pain, before initiating opioid treatment for chronic pain, physicians should routinely order:

A. electromyography (EMG) testing.
B. electroencephalography (EEG) testing.
C. cytochrome p450 pharmacogenomic testing.
D. sleep apnea testing.
E. urine drug testing.

ANSWER=E

In 2016, the AUA endorsed the Centers for Disease Control Guideline for prescribing opioids for chronic pain. Familiarity w ith this guideline is im portant for urologists, given that urologists commonly treat patients w ith chronic pain conditions (i.e., chronic pelvic pain syndrome) and manage acute and chronic pain in postoperative patients who are already being treated w ith opioids. In recent years, the "opioid epidemic" has become a substantial public health problem, with a large increase in opioid abuse, addiction, and overdose deaths. For this reason, prior to initiating opioid treatm ent for chronic pain, the guideline calls for urine drug testing to assess for prescribed medications, controlled agents (including opioids), and illicit drugs.The guideline makes no recommendations for either EMG or EEG testing, and although the cytochrome P450 system is involved in opioid metabolism, cytochrome P450 pharmacogenomic testing has not yet dem onstrated clear clinical efficacy for chronic pain patients. While sleep apnea testing should be considered for patients suspected of having undiagnosed sleep apnea or other forms of sleep-disordered breathing, this testing is not otherwise routinely recommended prior to prescribing opioids for chronic pain. Finally, it is im portant for urologists to understand the im portance of m ultim odal therapy, including the use of NSAIDS and acetaminophen, in com bination w ith opioids in order to facilitate m inim ization of opiate dosage.

136. The Holmium laser fiber settings that will lead to the least amount of retropulsion of a renal pelvis stone are:

A. increased pulse energy, increased frequency, short pulse width.
B. decreased pulse energy, increased frequency, long pulse width.
C. increased pulse energy, decreased frequency, short pulse width.
D. increased pulse energy, increased frequency, long pulse width.
E. decreased pulse energy, increased frequency, short pulse width.

ANSWER=B

The three m odifiable Holmium laser settings are pulse energy, frequency, and pulse width. Decreasing pulse energy and a longer pulse w idth have the most effect on reducing retropulsion. Frequency has less impact on retropulsion overall, but increasing frequency w ill typically decrease retropulsion. Of the settings listed, the one which will lead to less retropulsion has a lower pulse energy with a long pulse width.

137. Two hundred incontinent women are randomized into treatment and placebo groups to evaluate a new antimuscarinic medicine with a primary endpoint of complete continence. The most appropriate statistic test to evaluate the study is:

A. logistic regression.
B. ANOVA.
C. paired t-test.
D. Fisher's exact test.
E. chi-square test.

ANSWER=E

In the scenario described, the group design is such that the dependent variable is abinary variable, so the chi-square test will indicate if there are significant differences in the percentage in each group. Fisher's exact test should be used when the number of subjects in any subgroup is below five. On the other hand, if the dependent variable is a continuous variable, and the design is a group design, the t-tests (if there are tw o groups) or Analysis of Variance (ANOVA) if more than tw o groups are considered. If an independent variable is added to the dependent variable in the scenario above, then a logistic regression would be used.

138. The best hemostatic agent to use during robotic-assisted partial nephrectomy in patients with a history of red meat allergy is:

A. FlosealR.
B. SurgifloR.

C. TisseelR.
D. BioGlueR.
E. EvicelR.
ANSWER=E
Floseal® and Surgiflo®are both hemostatic agents that contain bovine or porcine- derived gelatin matrix. Therefore, anaphylactic reactions have been described with their usage. Similarly, Tisseel® contains aprotinin, which is a bovine-derived hemostatic agent and allergic reactions have been described in up to 5% of patients. Bioglue®, which also contains bovine-derived components, is a tissue sealant and cannot be applied on a bloody surface as a hemostatic agent. Evicel® is the only fibrin-based hemostatic agent that does not contain aprotinin and is derived from human fibrinogen. It is the safest hemostatic agent to use in patients w ith known allergies to red meat. The incidence of red meat allergies has been increasing. It has recently been reported that a bite from the Lone Star tick can lead to the developm ent of a red meat allergy.

139. Following neoadjuvant XRT, a five-year-old boy undergoes en bloc resection of a large pelvic sarcoma, including the left ureter 2 cm above the iliac vessels. The most appropriate intraoperative management is:
A. nephrostomy tube diversion.
B. ipsilateral ureteroureterostomy.
C. Boari flap.
D. transureteroureterostomy.
E. ileal ureter.
ANSWER=D
Ureteral reconstruction in a radiated field requires reestablishment of ureteral drainage in a non-radiated area. This would best be accomplished in this case by a transureteroureterostom y (TUU). A Boari flap would not be indicated follow ing pelvic radiation. The distal segment would not be of adequate length to bridge a long gap with an ipsilateral ureteroureterostom y. Proximal diversion with a nephrostomy tube is only tem porary and associated with complications. Because of potential radiation injury to the bowel, ileal ureter would not be the first choice unless TUU was not technically feasible.

140. A 45-year-old woman with a 2 cm obstructing renal pelvis stone is scheduled for a single-stage PCNL. She has a negative urine culture and no history of UTIs. To reduce the risk of postoperative sepsis, she should receive I.V. ampicillin and gentamicin perioperatively and:
A. cephalexin for seven days preoperatively.
B. nitrofurantoin for seven days preoperatively.
C. no additional oral antibiotics preoperatively.
D. ciprofloxacin for seven days postoperatively.
E. trimethoprim/sulfamethoxazole for seven days postoperatively.
ANSWER=C
The first randomized controlled trial of preoperative prophylactic antibiotics prior to PCNL demonstrated no advantage in reducing the risk of sepsis by providing one week of preoperative oral antibiotics in patients at low risk for infectious complications. The authors concluded that antibiotics according to the AUA Best Practice Statement of less than 24 hours perioperatively appear sufficient in this low- risk population. Additionally, compliance w ith the AUA Best Practice Statement has also been retrospectively shown to not increase the risk of postoperative infection in low-risk patients undergoing PCNL; therefore, in this low-risk patient w ith a negative urine culture and w ithout an indw elling ureteral stent or nephrostomy tube, starting antibiotics one week preoperatively is not recommended. Additionally, prolonged postoperative antibiotics should only be administered if the patient has signs or symptoms of infection follow ing surgery.

141. A 62-year-old woman with right rib pain and 10 kg weight loss has a CT scan that shows a 6 cm left renal mass and multiple bone metastases. Serum studies are normal except for a hemoglobin of 11.4 mg/dL. Renal mass biopsy shows clear cell RCC. The next step is:
A. left cytoreductive nephrectomy.
B. pazopanib.
C. sunitinib.
D. pembrolizumab and axitinib.
E. cabozantinib and ipilimumab.
ANSWER=D
The patient has a new diagnosis of IMDC (International Metastatic Renal Cell Carcinoma Database Consortium) interm ediate-risk metastatic renal cancer. Several recent trials have inform ed and changed the management of newly diagnosed metastatic renal cancer. In 2013, the COMPARZ study showed that pazopanib (a tyrosine kinase inhibitor) had a superior side effect profile and was not inferior to sunitinib (a tyrosine kinase inhibitor) in a 1,110 patient study. The median progression-free survival in the pazopanib arm was 10.5 months. In 2018, the CHECKMATE 214 study showed that the com bination of nivolumab (a PD-1 inhibitor) plus ipilim um ab (an anti-CTLA-4 antibody) was superior to sunitinib in a 1,096 patient trial. The median progression-free survival in the nivolumab plus ipilimum abarm was 11.6 months. In 2019, the KEYNOTE 426 trial showed that the com bination of pembrolizumab (a PD-1 inhibitor) and axitinib (a selective VEGFR inhibitor) was superior to sunitinib alone in an 861 patient trial. The median progression-free survival in the pem brolizumab and axitinib arm was 15.1 months. In the same issue of the New England Journal of Medicine, the JAVELIN Renal 101 trial reported that the com bination of avelumab (an anti-PDL-1 ligand antibody) and axitinib were superior to sunitinib alone in an 886 patient trial. The median progression-free survival in the avelumab and axitinib arm was 13.8 months. The 2018 CARMENA trial showed that sunitinib alone was not inferior to nephrectomy follow ed by sunitinib in patients w ith metastatic RCC who were classified as having interm ediate-risk or poor-risk disease. Among 450 enrolled patients, the median overall survival was 18.4 months in the sunitinib-alone group and 13.9 months in the nephrectomy-sunitinib group. No significant differences in response rate or progression-free survival were observed. Cabozantinib (a m ulti-targeted tyrosine kinase inhibitor) has been shown to prolong survival when compared to everolimus in patients who have progressed after prior tyrosine kinase inhibitor treatm ent. The com bination of cabozantinib and ipilim um ab has not been tested in a phase III trial. Although the optimal therapy of newly diagnosed interm ediate risk metastatic renal cancer continues to be debated in the scenario presented, an upfront cytoreductive nephrectomy is not indicated as the patient has an asymptomatic primary tum or but symptomatic metastatic disease. Therapy with pembrolizumab and axitinib, cabozantinib, or nivolumab

and ipilim um ab would all be reasonable options and preferred over pazopanib or sunitinib alone. Of the choices presented, pem brolizumab and axitinib is the best option.

142. A 45-year-old man has an incidental finding of a 2 cm non-obstructing stone in his transplant kidney. His renal function is near baseline. The next step is:

A. no intervention.
B. SWL.
C. ureteroscopy.
D. PCNL.
E. pyelolithotomy.

ANSWER=D

Conservative management can be undertaken if the stone is small, < 4-5 mm in size, and if the renal function is near baseline. A stone size > 1.5 cm is a practical indication for percutaneous nephrolithotripsy (PCNL). Flexible ureteroscopy can be used to access smaller stones. SWL is discouraged as the initial approach because roughly 50% or more of patients require an additional procedure to achieve stone-free status. Pyelolithotom y is not indicated.

143. A 55-year-old woman is incidentally diagnosed with fibromuscular dysplasia involving the distal renal arterial branches during abdominal imaging for flank pain which has resolved. Her blood pressure is well-controlled on two medications that she started ten years ago. In addition to continuing medication and routine blood pressure checks, the next step is:

A. no additional intervention,
B. duplex ultrasound surveillance,
C. renal scintigraphy.
D. percutaneous transluminal angioplasty,
E. surgical revascularization.

ANSWER=B

Fibromuscular dysplasia (FMD) is a non-atherosclerotic, non-inflam m atory vascular disease. It mostly involves the mid to distal renal artery and can affect segmental renal artery branches. FMD has a female predominance and typically presents in patients between 20-60 years of age. The most common symptomatic presentation is a middle-aged woman w ith new-onset or diffic ult to control hypertension. Asymptomatic patients are most often diagnosed on imaging studies. Patients in whom hypertension has been present for many years should be continued on anti- hypertensive medications as long as blood pressure control is satisfactory. Duplex Doppler ultrasound surveillance of kidney length and cortical thickness should be done once or twice a year. If blood pressure control becomes difficult, medication side effects become intolerable or renal size or function decrease, percutaneous translum inal renal artery angioplasty (PTRA) should be performed. Surgical revascularization is reserved for cases not amenable to percutaneous approaches such as those with FMD involving distal branches. Renal scintigraphy is no longer recommended as a screening test for renovascular hypertension.

144. A 34-year-old C6 tetraplegic man with an indwelling 14 Fr urethral catheter that is changed monthly has new-onset hydronephrosis. The adjunct treatment associated with the best chance of upper tract preservation is:

A. low-dose prophylactic antibiotics.
B. changing to 16 Fr indwelling catheter.
C. changing indwelling catheter every three weeks.
D. changing to a suprapubic tube.
E. intravesical onabotulinumtoxinA injections.

ANSWER=E

Since the bladder should be adequately drained w ith an indwelling catheter, the exact cause of upper tract deterioration in this cohort is unclear. It is postulated that upper tract changes are related to a functional obstruction manifested by chronicsubclinical detrusor overactivity (DO) in the face of sphincter dyssynergia. Regardless of the cause, the development of low bladder compliance on urodynamics has been associated w ith VUR, radiographic upper tract abnormalities, clinical pyelonephritis, and upper tract calculi. Hence, m aintaining high compliance and suppressing DO in chronically-catheterized patients may prevent or delay renal deterioration. This can usually be achieved with the use of antimuscarinic or beta-3-agonist medications in patients with indwelling catheters or with intravesical onabotulinum toxinA injections. Prophylactic antibiotics are to be avoided in chronically-catheterized patients and upsizing the indwelling urethral catheter, changing it more frequently, or switching to a suprapubic tube are unlikely to improve long-term detrusor compliance.

145. Prior to placing an inflatable penile prosthesis, a 49-year-old man with an eight-year history of erectile dysfunction (ED) should be advised that his maximal penile length will be:

A. 2 cm shorter than his erect length prior to ED onset.
B. unchanged from his erect length prior to ED onset, but there will be glans softening.
C. slightly larger than his erect length prior to ED onset pending regular device cycling.
D. difficult to predict due to the long duration of his ED.
E. the same as the preoperative length of the fully stretched flaccid penis.

ANSWER=E

It is im portant to counsel patients about to undergo penile prosthesis surgery that the preoperative length of the fully stretched flaccid penis is typically the maximal length that can be obtained after penile implant placement and that the procedure may result in a degree of penile shortening and glans softening. The other statements among the provided choices have not been demonstrated. Although the exact penile length may indeed be difficult to predict, eventual length has not been conclusively shown to be impacted by the duration of ED.

146. A 54-year-old man has a 12-month history of urinary frequency and a sense of incomplete voiding. DRE reveals a 40 mL prostate with no nodules. His PSA is 0.8 ng/dL and the urinalysis is normal. The AUA Symptom Score is 12 with a diseasespecific quality of life score of 1. The next step is:

A. observation.
B. PVR.
C. uroflowmetry.

D. alpha-blocker.
E. antimuscarinics.
ANSWER=A
According to the AUA BPH guidelines, the next step in uncomplicated and minim ally symptomatic LUTS are watchful waiting and re-evaluation in one year. PVR and uroflowm etry are not recommended in the evaluation of uncomplicated LUTS but are optional in the evaluation of complicated LUTS or LUTS that is progressive or bothersome. Factors that indicate complicated LUTS include: suspicious DRE, hematuria, abnormal PSA, pain, infection, palpable bladder, or neurologic disease. This patient scenario represents uncomplicated LUTS and can be observed w ithout alpha-blockers or antimuscarinics, especially given that his urinary specific quality of life is reported as excellent. Observation should only be pursued after a thorough discussion w ith the patient.

147. A 29-year-old otherwise healthy man has perineal pain, constipation, and intermittent dysuria. DRE demonstrates pelvic muscle tenderness. Urinalysis is normal. The most likely urodynamic finding is:
A. low peak flow rate.
B. detrusor overactivity.
C. poor compliance.
D. detrusor sphincter dyssynergia.
E. large bladder capacity.
ANSWER=A
This patient has evidence of pelvic floor muscle dysfunction. The most common urodynamic finding is outlet obstruction due to dysfunctional voiding (spasms of the external sphincter during voiding) which would result in a low flow rate and an interm ittent voiding pattern. This is not detrusor sphincter dyssynergia because there is no spinal cord injury. This condition is not typically associated with detrusor overactivity, poor compliance, or large bladder capacity unless the condition is chronic over several years.

148. A 55-year-old man has LUTS and bothersome retrograde ejaculation on maximum medical therapy. He has a 60 gm benign prostate with a large median lobe on cystoscopy. The next step is:
A. bipolar TURP.
B. UroLift™.
C. water vapor therapy (Rezum™).
D. holmium laser prostate enucleation.
E. transurethral prostate vaporization.
ANSWER=C
Retrograde ejaculation is a potential sequela of any treatm ent that decreases tone at the bladder neck and this must be considered when considering surgical therapy for male LUTS. Both prostatic urethral lift (Urolift™) and water vapor therapy (Rezum™) are actually associated with preservation of sexual and ejaculatory function, and are given conditional recommendations (based on Grade C evidence) by the AUA Guideline Panel on Surgical Management of Lower Urinary Tract Symptoms A ttributed to Benign Prostatic Hyperplasia. However, as this patient has a large median lobe, water vapor therapy is a better choice than Urolift™. TURP, holmium laser enucleation of the prostate, and transurethral vaporization of the prostate are all associated w ith significant ejaculatory dysfunction.

149. During vasectomy reversal, a distal epididymovasostomy site is superior to more proximal sites because of:
A. higher patency rates. B. higher pregnancy rates.
C. lower antisperm antibody formation rates.
D. lower late stenosis rates.
E. shorter operative times.
ANSWER=B
Sperm undergo a number of maturational changes as they transit through the epididymis, including increasing m otility and alterations in membrane structure,both which facilitate subsequent oocyte fertilization. A distal epididymovasostomy site facilitates sperm transit through more of the epididymis, where this m aturation occurs. As a result, distal epididymovasostomy sites are associated with higher pregnancy rates than more proximal sites, regardless of the epididymovasostomy technique used. A distal epididymovasostomy site is commonly more challenging to perform than a more proximal site, given the extra distance that must be traversed to achieve the anastomosis. There is no reported difference in the literature regarding patency rates, antisperm antibody form ation rates, late stenosis rates, or operative times when comparing more proximal vs. more distal epididymovasostomy anastomotic sites.

150. A 74-year-old woman with type 1 diabetes mellitus and ESRD undergoes an MRI scan with gadolinium contrast. She develops pruritus, decreased range of motion, increased skin tightness, and red patches along her ankles. The next step is:
A. racemic epinephrine.
B. corticosteroids.
C. diphenhydramine.
D. hemodialysis.
E. insulin.
ANSWER=D
The patient likely is suffering from nephrogenic systemic fibrosis (NSF) that has resulted from the adm inistration of gadolinium contrast in a patient with compromised renal function as a result of the diabetes mellitus. The manifestation of the disease presents w ith fibrosis in the skin (tightness) and subcutaneous tissue (decreased range of m otion). Appropriate treatm ent is hemodialysis. This is not an acute reaction, thus epinephrine, corticosteroids, and diphenhydram ine are not appropriate. Although hyperglycemia may be present, the adm inistration of insulin would not improve NSF.

By
DR. Nasser Saad Albaddai MD
Resident urology